Department of Mines and Energy
Government of Newfoundland and Labrador

Hon. Jerome Dinn, Minister

ANNUAL REPORT FOR 1985/86

St. John's, Newfoundland
1986

90-04303/1

The Honourable Jerome W. Dinn,
Minister, Department of Mines and Energy

Sir:

I have the honor to submit to you, herewith, the Annual Report of the Department of Mines and Energy for 1985/86.
This is the third number in the Annual Report Series which was started in 1983.
Respectfully submitted,

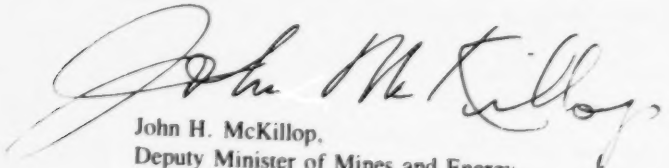
John H. McKillop,
Deputy Minister.

FOREWORD

This is the third in a series of annual reports of the department, which began with the report for 1983.

Although the Mineral Development Division of the department has been publishing a comprehensive report of its activities on an annual basis, it was decided that the demand for a regular annual report covering the activities of the whole department had reached the point where such a report should be produced. In addition, such an annual report is regarded as a valuable historical record which tends to be consulted as a readily accessible source of relevant data that must be recalled from time to time.

The officers of the department, including the division directors, the section heads, the assistant deputy minister and, especially, the head of the Publications and Information Section and his staff, are to be congratulated on their successful effort in producing this comprehensive and useful report.



John H. McKillop,
Deputy Minister of Mines and Energy.

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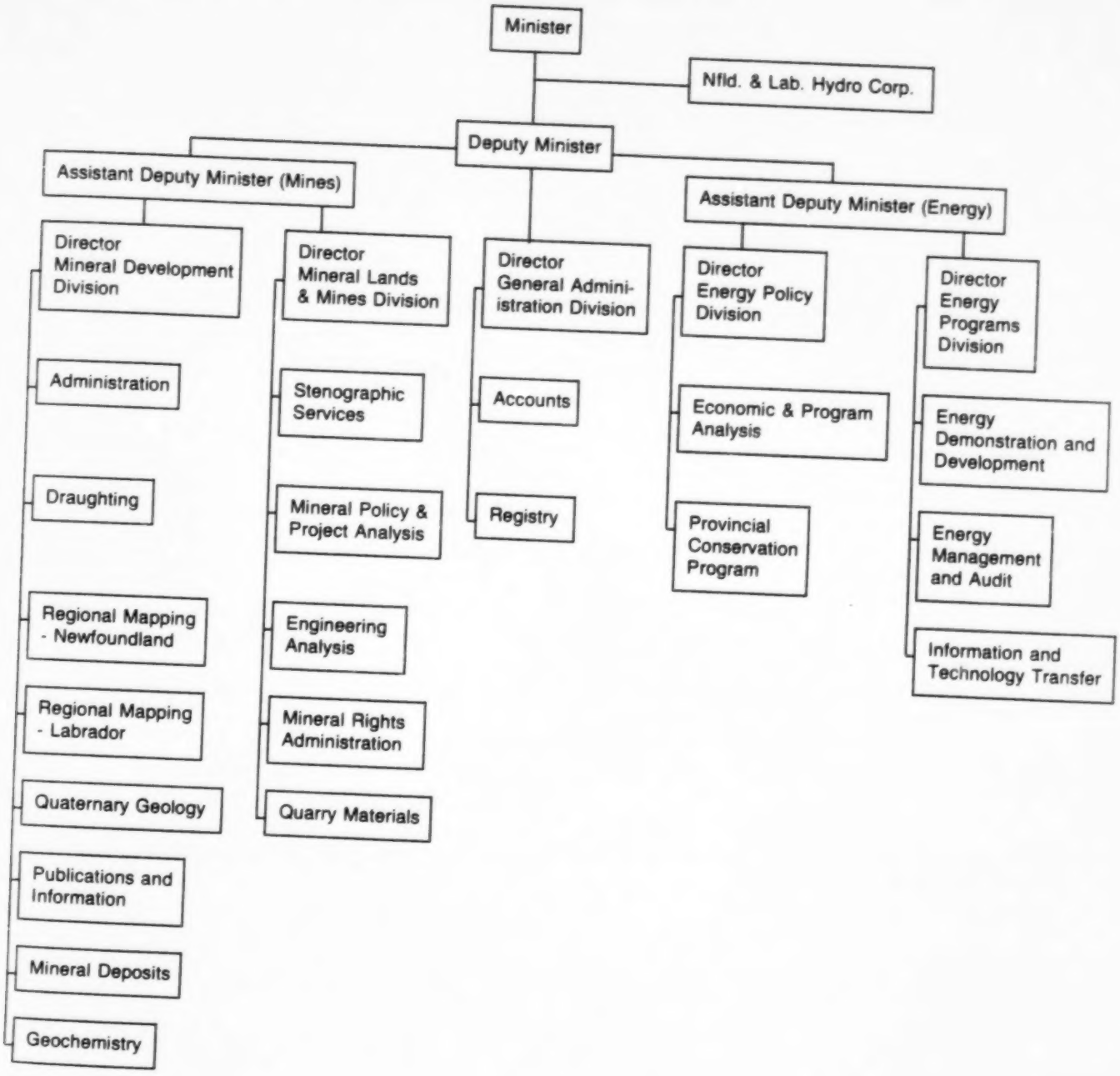
DEPARTMENT OF MINES AND ENERGY



ADMINISTRATION DIVISION
DEPARTMENT OF MINES AND ENERGY

The Administration Division's work encompasses the entire department. The functions are administration and personnel, accounting and registry services, with a breakdown as follows:

i) Administration and Personnel

- General administration, staffing and personnel
- Budget coordination, preparation and monitoring
- Preparation of annual salary estimates
- Accommodations, maintenance and security
- Liaison with government departments/agencies and representation on committees, boards and at meetings

ii) Accounting

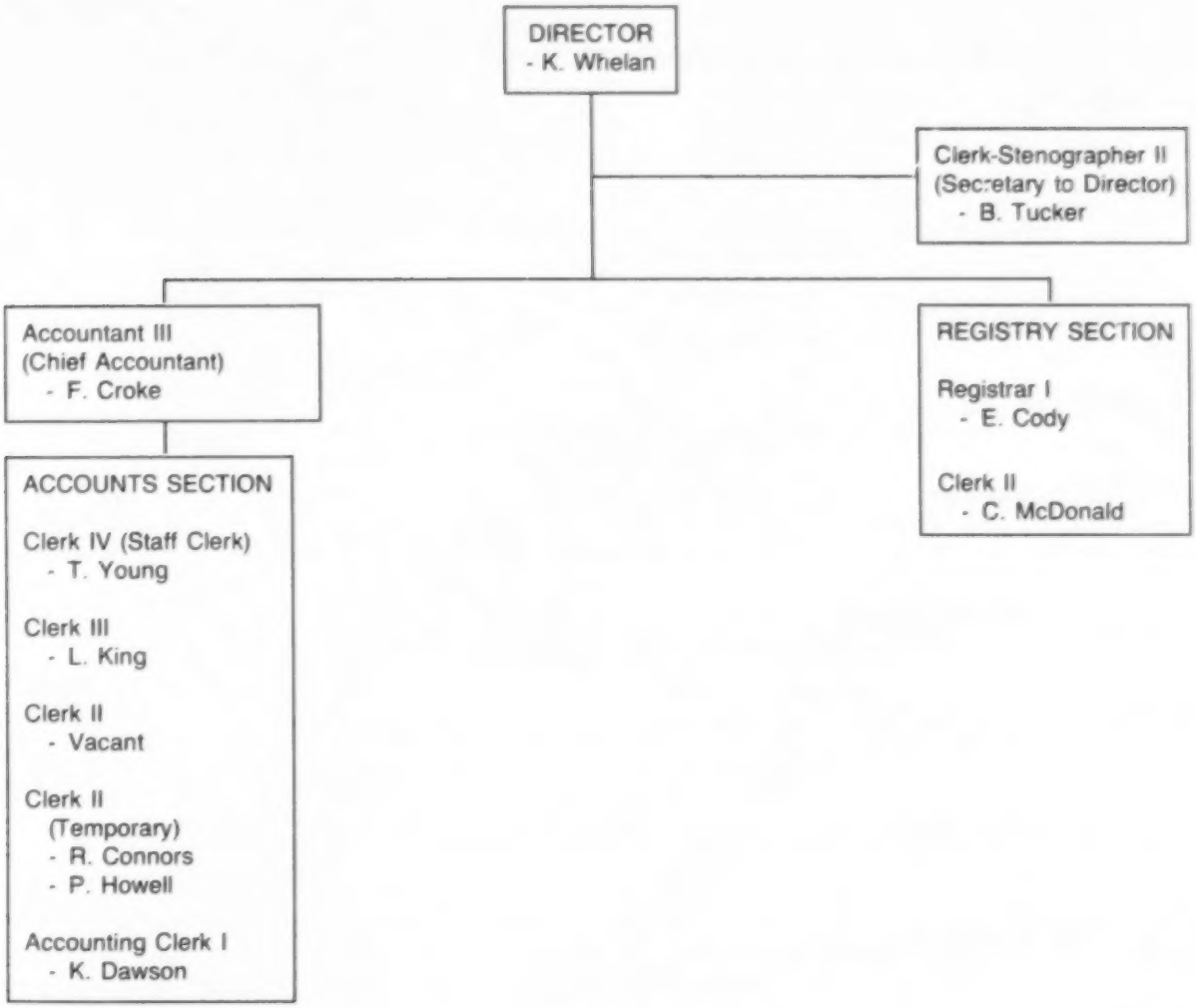
- Invoice processing
- Travel payments
- Payroll services (attendance, leave, payroll and salary monitoring)
- Revenue collection
- Financial reports
- Inventory recording and control
- Reconciliations
- Budget monitoring
- Requisition (for goods and services) processing

iii) Registry Services

- Correspondence filing, indexing and retrieval
- Mail receiving, sorting and distribution
- Ordering, inventory and distribution of general office supplies
- Forms and document retention

The 'permanent staff' complement of the department totaled 86 positions in fiscal year 1985-86. At yearend, there were seventy-two (72) approved temporary positions in addition to the permanent staff employment. There were 85 approved technical and non-technical staff positions during 1985 field season. Including permanent, temporary and field positions, approximately 100 hirings took place during the year.

DEPARTMENT OF MINES AND ENERGY
GENERAL ADMINISTRATION DIVISION
ORGANIZATION AND STAFFING



STATEMENT OF EXPENDITURE – RELATED REVENUE*

DEPARTMENT OF MINES AND ENERGY

FOR 1985/86

	Budget	Actual Expenditures
Minister's Office	$ 145,600	$ 131,855
General Administration	1,112,900	1,188,408
Less Related Revenue	(11,800)	(2,812)
Mineral Development	5,271,700	4,832,498
Less Related Revenue	(821,700)	(641,674)
Mineral Lands & Mines	207,100	192,308
Less Related Revenue	(10,000)	(6,950)
Mines Management	674,400	627,689
Energy Policy Development	660,100	446,197
Less Related Revenue	(195,000)	(9,787)
Conservation and Renewable Energy Resource Development	1,450,200	666,957
Less Related Revenue	(1,407,200)	(1,081,789)
Net	$ 7,076,300	$ 6,342,900

* Petroleum Directorate and Nfld. and Labrador Hydro figures not included.

The Energy Programs Division develops and delivers programs and policy measures which reduce the provincial dependence on external energy sources, and reduce the cost of energy to residential, industrial, commercial, and institutional users. The major thrusts are the efficient use of energy from traditional sources (oil and electricity), and promotion of the wider use of indigenous alternative sources of energy (primarily wood, peat, wind, and municipal refuse).

Last year (1984-85), two major Federal-Provincial cost-sharing programs of the Division ended. The Canada-Newfoundland Conservation and Renewable Energy Demonstration Agreement (CREDA) ran from 1979 to 1985, and saw the expenditure of $8,589,900 in the Province for projects demonstrating conservation and alternative energy use. The National Energy Audit Program (NEAP) provided $919,700 from 1982 to 1984, enabling the Province to analyze energy usage in 350 buildings in all regions. During this year (1985-86), development of new programs building on the foundations laid by CREDA and NEAP was the main focus of activity.

Two cost-sharing programs were worked out with Ottawa. The first was a two-year agreement under the Federal Enerdemo Program, worth $280,600 (80 per cent Federal, 20 per cent Provincial) to complete the CREDA program. Many projects carried out under CREDA needed further monitoring and reporting to demonstrate fully the various applications of conservation and alternative energy technology.

The second agreement with the Federal Government was negotiated to continue demonstration and information transfer work in the conservation and alternate energy fields. A Memorandum of Understanding (M.O.U.), signed in February, 1986, will provide up to $7.5 million in government funds over 1986-88 for joint programs cost-shared 60-40 by Federal and Provincial governments respectively, and for "parallel" projects which will not be cost-shared. Such agreements were being arranged between the Federal Government and several other provinces, but Newfoundland's was the first to be signed and implemented.

The year's activities for the Division are reviewed below.

IN-HOUSE ENERGY MANAGEMENT PROGRAM

Information gained from NEAP and its predecessor, the Energy Bus Program, indicated that the Provincial Government could save approximately $4.8 million yearly in energy costs for those public sector buildings not operated by the Department of Public Works (which has a separate energy conservation program), through the implementation of low-cost energy-efficiency measures. The first requirement in the design of an appropriate energy management program was for an accurate database for this sector. The second requirement was for improved building energy use analysis programs for field use. Developing these tools comprised the major task of the Energy Management and Audit Section during the year.

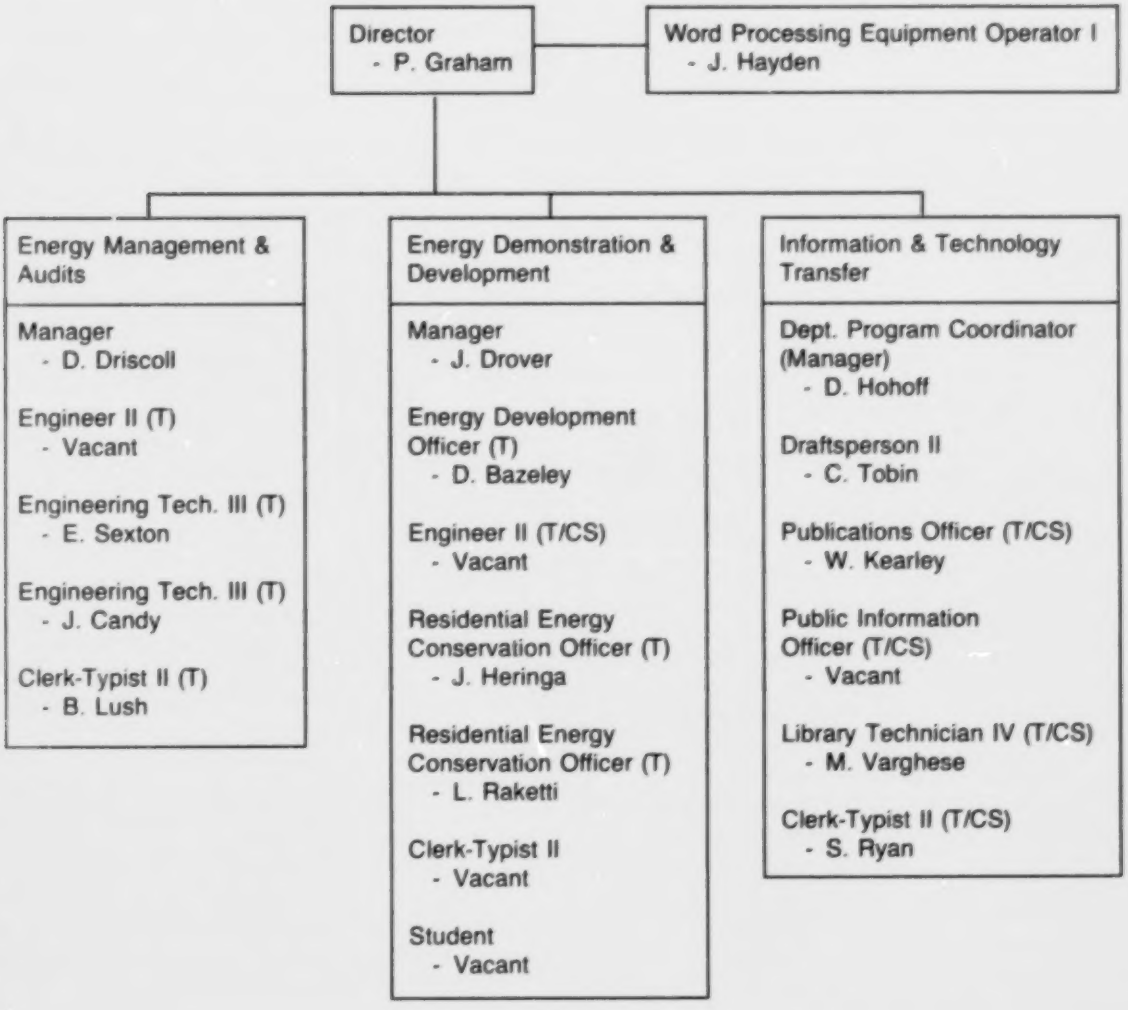
The resulting In-house Energy Management Program is aimed at improving the energy-efficiency of these buildings. The Province's 608 schools, 27 Board-controlled hospitals, 210 municipal buildings, and 75 other buildings operated by provincial crown corporations and agencies will be included in the Division's program. The goal is to reduce the current annual energy cost of approximately $32 million by $1 million each year, until an overall reduction of 15 per cent is achieved.

During 1985-86, development was begun of a complete computer software package for conducting on-site energy analysis and compiling a database which eventually will contain energy-related information on all public sector buildings in the Province. The software will also provide a priority analysis of energy management actions for public buildings. The development and testing of the software will be completed during 1986-87, with full implementation thereafter. Only extensive use of computers and the full cooperation of provincial agencies will enable the small staff of the section (Manager, two technicians, and secretary) to run an effective program.

The Section has been requested to act as lead agency for coordinating the development of government energy analysis computer software on a national basis. This resulted from the presentation of an overview of the Section's program to a meeting of Provincial energy departments in Edmonton.

In addition to the energy management program, the Section was also active in two other areas: wind energy analysis and electrical utility load management. The wind regime in Newfoundland holds great potential for energy generation, but accurate data are scarce. A computerized database for wind resources was completed during the year, which will allow the evaluation of wind turbine performance for specific sites.

DEPARTMENT OF MINES AND ENERGY
ENERGY PROGRAMS DIVISON
ORGANIZATION AND STAFFING



ENERGY DEMONSTRATION PROJECTS AND INFORMATION ACTIVITIES

The Energy Demonstration and Development Section and the Information and Technology Transfer Section work closely together to promote and assist conservation and alternative energy activities in the Province. Demonstration and Development consists of the Manager, two Engineers, two Residential Energy Advisors, and a Secretary. The Information and Technology Transfer Section has a Manager, Publications Officer, Draftsperson, Librarian, and Secretary.

During the year, much of the effort was on completing the monitoring of CREDA projects to collect data on energy use and costs, and on the publishing and dissemination of information on them. This work was funded under the Enerdemo agreement, which provided $24,900 for seven renewable energy projects and $255,700 for twenty conservation projects. Projects included a containerized woodchip boiler for heating the Clarenville District Vocational School, planning for a major conference on wood and peat use, the Industrial/Commercial energy-efficiency retrofit program, an energy management and control system at the Health Sciences Centre, a waste heat recovery system at Western Memorial Hospital, and a newly-constructed energy-efficient school at Glenwood.

Another major focus was the Province's Alternative Fuels Development Program. Analysis carried out during the year indicated the potential of replacing one hundred million litres of the provincial annual oil consumption for heating in the industrial, commercial, and institutional sectors with two hundred and fifty thousand cords of woodchips from "uncommercial" forest resources. The resulting employment from this activity would total approximately 4000 construction jobs averaging one year in duration, and 250 permanent jobs primarily in wood supply.

Achievement of this goal would take at least ten years, and some projects would only be feasible when oil prices return to the levels of 1985. Projects investigated during 1985-86 for probable implementation within two years include wood boilers for the hospitals in Corner Brook and Grand Falls, wood-fired electrical generation in Roddickton, and a pipeline to heat the Gander District Vocational School from the wood boiler at James Paton Memorial Hospital. Funds were also provided for a trial supply of fire-killed wood from the Port Hope Simpson area, on the coast of Labrador, to St. Anthony.

The provision of advice to householders on energy efficient construction and renovation techniques continued as an important service of the Division. Participation in trade shows, the offering of seminars across the province, the printing, publishing and distribution of pamphlets and brochures, and answering personal enquiries comprised the major activities.

The Energy Branch Library continued to extend its holdings through the year, and provides a valuable reference service to technical staff, consultants, and the public. The collection included over 3000 books, proceedings and reports by March 31, 1986, and over 200 periodical series are received.

ENERGY PROGRAMS DIVISION STAFF 1985-86

Administration Section

Director:	Philip Graham, P.Eng.
Secretary:	Jo Hayden

Energy Management and Audit Section

Manager:	Don Driscoll, P.Eng.
Technicians:	Jon Candy
	Ed Sexton
Secretary:	Brenda Lush

Energy Development and Demonstration Section

Manager:	John Drover, P.Eng.
Economist:	Alex Winsor (to Aug. 85)
Residential Energy Information Officers:	Jo Heringa
	Rod Parsons (to Dec. 85)
	Les Raketti (from Jan. 86)
Secretary:	Sabrina Mathusz (to Nov. 85)

Information and Technology Transfer Section

Manager:	Donna Hohoff
Publications Officer:	Wade Kearley
Librarian:	Mary Varghese
Draftsperson:	Charity Tobin
Secretary:	Suzanne Ryan

The following Publications are now available from the Information Section:

Energy Information Guide. CREDA Publication CR85-01, August, 1985.

Large Swimming Pool Energy Retrofit: St. John's Aquarena. CREDA Publication CR85-02.

Small Swimming Pool Energy Retrofit: Town of Grand Bank. CREDA Publication CR85-03, September, 1985.

Energy Efficient New School, Glenwood. Terra Nova Integrated School Board. CREDA Publication CR85-04, December, 1985.

Woodchip Harvesting and Handling: Abitibi-Price Incorporated, Grand Falls. CREDA Publication CR85-54, December, 1985.

Bishop's Falls Milled Peat Mining Project: Noval Technologies Limited, with contributions from Memorial University of Newfoundland and Lundrigans Newfoundland. CREDA Publication CR85-70, March, 1985.

St. Shotts Sod Peat Harvesting Project: Southern Avalon Development Association. CREDA Publication CR85-71, May, 1985.

Sod Peat Marketing Study: Southern Avalon Development Association. CREDA Publication CS85-72, September, 1985.

Cycle Charge and Wind Turbine Demonstration Project: Newfoundland Telephone Company Limited. CREDA Publication CR85-90, July, 1984.

Overview of the Small Scale Energy Demonstration Program. CREDA Publication CR85-100, September, 1985.

Keep Warm with Less Heat. Curriculum enrichment unit for Physics 2205, Student Manual and Teacher's Guide.

Housing Design Course, 1984 Proceedings.

Project Information Summaries

Waste Heat Recovery – Western Memorial Hospital
Cycle Charge Test – Newfoundland Telephone Company Limited
Sod Peat Fuel Production – St. Shotts
Wood Waste Burner – Walken Enterprises
Propane Powered Car – Department of Transportation
Insulation Upgrading – Royal Canadian Legion Branch 35
Poultry Litter Burner – John Robinson
Waste Fuel Burning Plant – George and Linda van Koetsveld
Waste Oil Burner For Space Heating – Carol Automotive
Fish Oil as a Fuel – Fishery Products International
Lighting and Heating Improvements – Humber Gardens
Refrigerant Heat Recovery – Humber Gardens
Heat Recovery and Power Factor Correction – Hodder Memorial Stadium
Electrical Demand Control and Automatic Night Setback System – St. Anne's School
Computer Monitoring of Energy Consumption in Schools – Terra Nova School Board
Double Glazing and Oil Burner Replacement – Vera Perlin School
Energy Efficient Arena – The Bay Arena
Power Factor Improvement – Humber Gardens Arena
Brine Pipe Insulation – Humber Gardens Arena
Demand Control and Night Setback – Lester Pearson High School
Outdoor Reset Boiler Controls and Energy Efficient Relamping – Harvey's Travel Limited
Ventilation and Temperature Control – Wabush Recreation Centre
Finnish Fireplace – Michael Mason

Air-To-Air Heat Exchanger – LSPU Hall
Heat Pump Lumber Dryer – Russworthy Woodworking Limited
Air-To-Air Heat Pump – F.M. Stanley, Sr.
Air-To-Air Heat Pump – Spencer Winters
Air-To-Air Heat Pump – Adrian Bonia
Air-To-Air Heat Pump – C.J. O'Driscoll
Water-To-Air Heat Pump – Robin Shaw
Water-To-Air Heat Pump – William Newton
Air-To-Air Heat Pump – D. Thompson
Air-To-Air Heat Pump – Lawrence Cashin
Energy Efficient New Home – Paul Shoemaker
Photovoltaic Generation – Bart Higgins
Passive Solar Sunspace – Joan Tucker
Solar Heating For Residential Swimming Pool – Neville Kean
Solar Heating of Club Swimming Pool – Royal Newfoundland Yacht Club
Sunspace – Dale Sudom
Housing Retrofit Program – The Lough House
Housing Retrofit Program – The Bishop House
Housing Retrofit Program – The Lawlor House
Housing Retrofit Program – The Parsons House
Swimming Pool Blanket – Exploits Swimming Pool
Swimming Pool Retrofit – Grand Bank
Refrigerant Heat Recovery – The Aquarena
Weatherstripping and Summer Hot Water Retrofit – Harvey and Company Limited
Furnace Upgrading and Storm Windows – Basilica, St. John's
Heat Pump Conversion – Fish Dryer – H.B. Dawe Limited
Laundromat Waste Heat Recovery – Merrymeeting Laundromat
Waste Heat Recovery – City Consumer's Co-Op Food Store
Wind Generated Electricity – Robert King
Wind Driven Generator – Edward Duffy
Wind Turbine – Newfoundland Telephone Company Limited
Whole Tree Chipping For Fuel – Abitibi-Price Incorporated
Commercial Woodchip Heating – John Lloyd Limited
Commercial Woodchip Heating – Natural Enterprises
Wood-Fired Boiler Plant – Newfoundland Hardwoods Limited
Woodchip Heating – Lewis Little
Woodchip Heating – Harold Samson

Energy Technology Booklets

Solar Power in Newfoundland and Labrador
Heating with Wood in Newfoundland and Labrador
Wind Power in Newfoundland and Labrador
Micro-Hydro Power in Newfoundland and Labrador

A wide variety of other information materials is also available on residential energy conservation techniques and other energy-related subjects.

ENERGY BRANCH
ENERGY POLICY DIVISION
1985/86 SUMMARY

MANDATE

The mandate of the Energy Policy Division is to monitor and analyze energy supply and demand, to advise government on energy policy issues, and to co-ordinate intergovernmental energy activities.

PERSONNEL

Director - Douglas Inkster
Manager - Economic & Program Analysis - Arch Hutchings
Economist II - Wayne Andrews
Economist II - Vacant
Internal Energy Conservation Coordinator - Allister Taylor
EDP Systems Officer - Dennis Sharpe
Word Processor Operator - Carolyn Hynes-Peddle
Word Processor Operator - Eva Fost
Clerk Typist II - Veronica Legge

BUDGET

The 1985-86 budget for the Division was $645,200. Part of this total was funded through the Canada/Newfoundland Planning Agreement for the development of a computerized energy demand forecasting model.

ACTIVITIES

1. The division is managing the development of a Provincial Energy Demand Model. Work commenced on this project in early February, 1986. A draft report is expected to be completed by middle of November 1986 and the final report by end of December. To oversee and give direction to this project two groups have been formed. A Steering Committee which is responsible for overall administration and policy setting of the project and a Statistical Working Group which is involved in the actual development of the model. Both groups are represented by staff from the Energy Policy Division.

2. As an ongoing task, the division continued to monitor International, National and Regional energy events and developments of relevance to the Province and prepared related reports.

3. Publication of the first annual energy review took place in September 1985, at which time work commenced on a second publication.

4. In January 1986, the division began switching from a mainframe environment to a micro/mainframe environment. This switch was completed by March 31, 1986. Substantial cost savings have now been realized and division staff have the flexibility to perform more specific tasks.

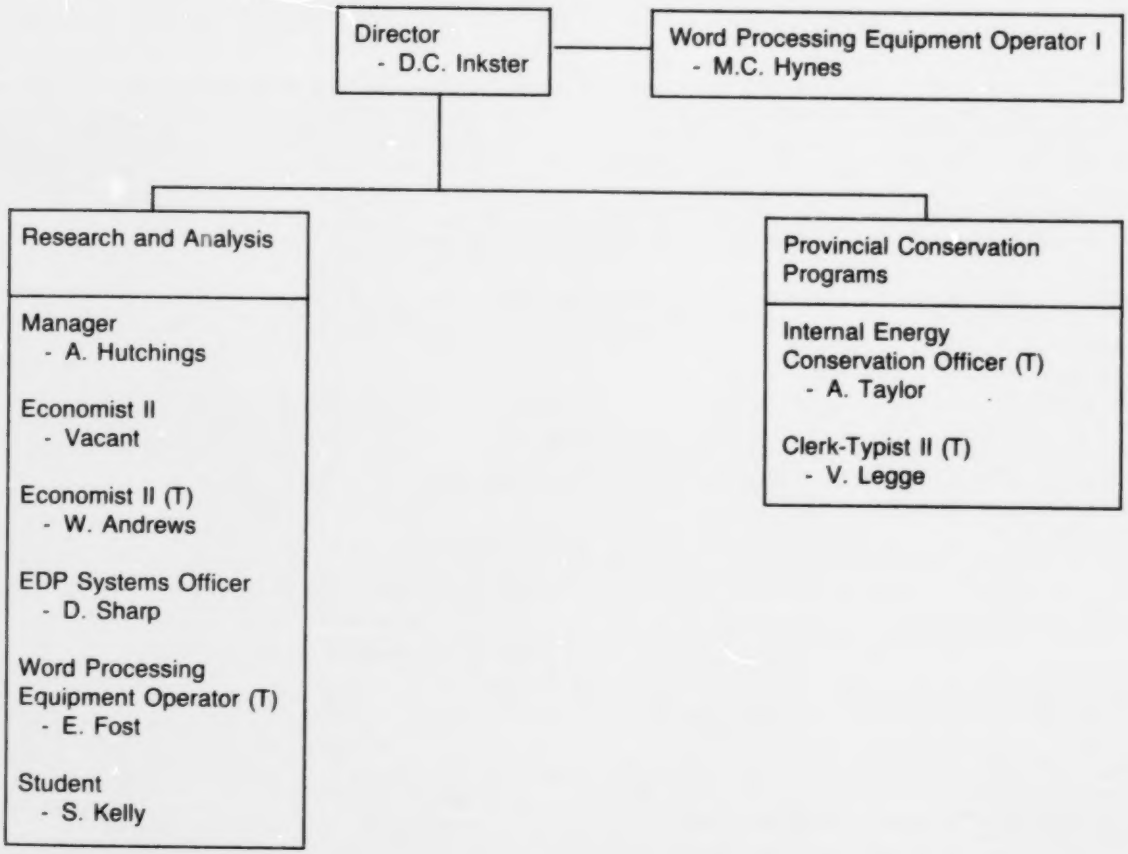
5. Over the past year increasing effort has been focused on improving information on energy supply and demand. In the last few years a great deal of information has been collected by the Energy Branch and other departments (Public Works and Finance in particular) through surveys, audits and publications. This information has been reviewed by this section and much of it has been computerized.

6. The Division has closely monitored pricing developments over the past year with particular emphasis on the period Nov. 1, 1985 to the present, a time during which world crude prices have been steadily decreasing.

   The Division has been involved in supplying information and briefs to other Provincial departments in the matter of falling oil prices.

   Representatives of the Division were closely involved in analysis, reports and briefs for the Minister in response to questions concerning the variance in prices paid in Newfoundland compared to prices in the rest of Canada.

DEPARTMENT OF MINES AND ENERGY
ENERGY POLICY DIVISON
ORGANIZATION AND STAFFING



7. A survey for the Annual Review of Energy Prices within the province for 1985 took place during the week of May 27-31, 1985. The report which details petroleum product and electricity prices in Newfoundland and Labrador was printed in November 1985.

8. Energy demand projections by sector and energy form (20 years forward) were updated. Meanwhile, the division will be producing a more detailed forecast as a part of the Energy Model project.

9. As an ongoing task of providing Programs Division with analysis and research relating to the various sectors of the province this Division has been involved in a number of projects. They included the development of a School Energy Management Program proposal. The Division has also assisted the Energy Audit Section in developing their program and has been involved in providing background information for the Department's brief on Recreational Facilities proposal for Cabinet concerning the Public Sector. The Division also was heavily involved in the preparation of the report 'Potential Impact of Energy Conservation and Alternate Fuels in Newfoundland and Labrador (1985-1995)'.

10. During the past year the Division has chaired several provincial/federal meetings focussing on coordination and communications between provinces during an energy supply shortfall. Progress was made in identifying gaps and/or compatible communication hardware that would be necessary in a shortage situation. Report prepared for the Interprovincial Advisory Committee on Energy.

    Work is proceeding on Newfoundland's Energy Demand Restraint program. Measures have been identified and analyzed and a draft outline of the report has been prepared.

11. The Division represented the government on the Provincial Advisory Committee (PAC) to the Energy Supplies Allocation Board (ESAB), which is responsible to the federal government for the management of all major national energy disruptions.

12. The Division also participated in the various tasks of the Northeastern International Committee on Energy (NICE) and its Emergency Planning Task Force. The purpose of this committee is to exchange information and to carry out joint studies and exercises relating to the common energy interests of the New England states and eastern Canadian provinces as required by the Conference of New England Governors and Eastern Canadian Premiers.

13. A survey and analysis of energy demand in Municipalities was started in October 1985. This will serve as a preliminary to future demand management and conservation initiatives in this sector.

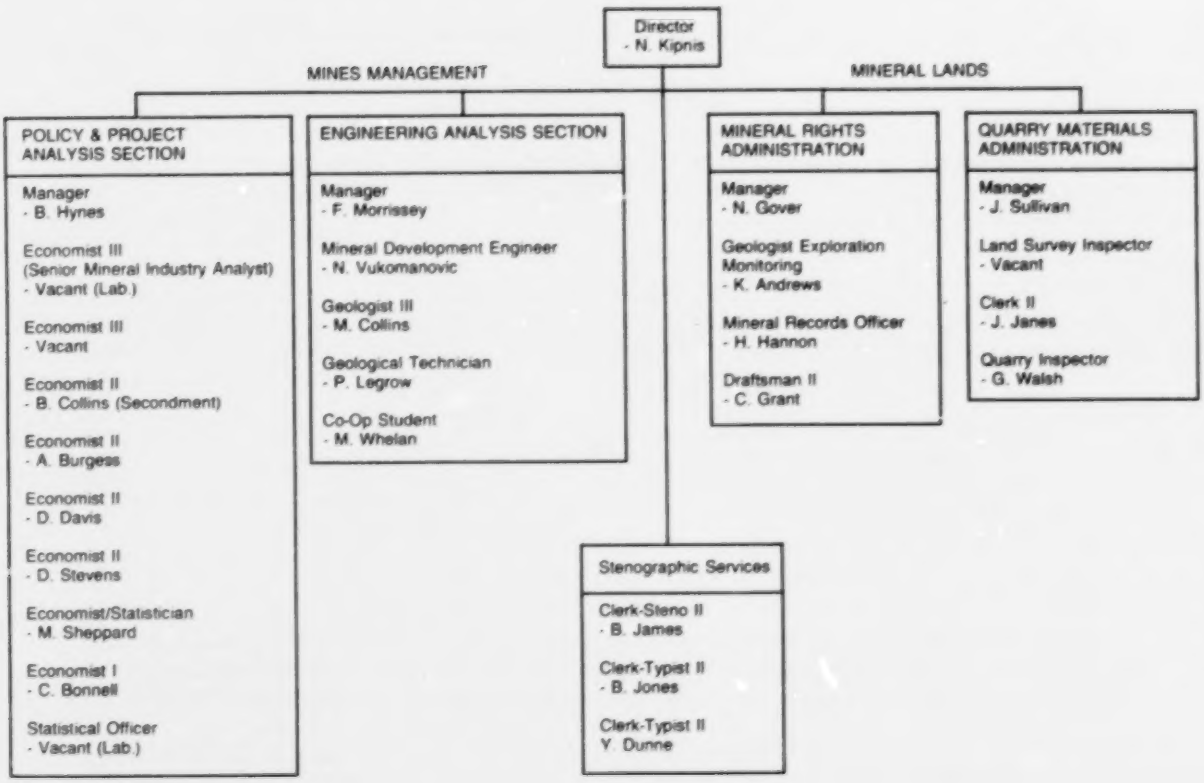
14. A school energy survey was completed as a preliminary for a guidebook for school administrators.

15. A review of electricity pricing options was carried out by Division staff. The objective of this review was to familiarize staff with the available pricing options which might be applied to the Province in the future.

16. The Division continued to monitor and analyze all energy related programs, federal and provincial, which are provided in the province. These evaluations enable the provincial government to compare success with similiar programs throughout Canada, to ensure that the province is keeping pace, and to ensure that an equitable share of federal funding for energy purposes comes to Newfoundland and Labrador.

17. Division staff also organized the completion of a school energy conservation course for grade X physical science students. The purpose of the project was to dissemenate knowledge about energy conservation and renewable resources technology; the enrichment of the Physical Science 2205 Course through demonstration of a practical application of basic science; and the provision of an opportunity for students to use an "applications package" of computer software in a real situation.

DEPARTMENT OF MINES AND ENERGY
MINERAL LANDS & MINES DIVISION
ORGANIZATION AND STAFFING



MINES BRANCH
MINERAL LANDS AND MINES DIVISION
MINERAL RIGHTS SECTION

INTRODUCTION

The Mineral Rights Section is responsible for that component of the minerals management process which consists of:

- administration of all legislation and policies related to the acquisition of mineral rights.
- management of all mineral agreements issued under various acts.
- monitoring of all exploration activity:

  (1) To ensure compliance with the provisions of the various exploration agreements and licences.

  (2) To collect data and prepare statistical reports for the analysis of trends in the exploration sector. In order to prepare recommendations for changes in legislation and policy, in order to foster and maintain a healthy and productive exploration climate in the province.

- providing for orderly storage, retrieval and safekeeping of all mineral land tenure records.

Mineral rights can be obtained under the provision of the Mineral Act, 1976. The principal means for obtaining these rights is by claim staking. On the island portion of the province, ground staking is employed, while in Labrador a system of map staking is used. Areas of known mineral deposits are occasionally classified as Exempt Mineral Land, i.e. the land is not open for competitive staking. In these E.M.L. areas, the Minister may call for proposals to develop the resource. The St. Lawrence Fluorspar Mining Project and the Wabush Area Dolomite Mining Project are examples which illustrate this process.

BUDGET

The budget for the Mineral Rights Section for the fiscal year 1985-86 was $91,800. Estimated net revenue from the sale of claim tags and maps was $10,000.

PERSONNEL

1 Manager: Noel F. Gover
1 Geologist: Kenneth Andrews
1 Records Officer: Harold Hannon
1 Draughtsperson: Cyril Grant

ACTIVITIES

(1) During 1985, there were 14,086 claims recorded. There were an additional 1,171 claims staked; these claims were not, however, recorded until 1986 due to a statutory waiting period. The 15,257 claims staked during 1985 represents a new record for the claims staking in the province. The previous high was 13,661 staked during 1981.

- There were 1,273 map staked claims recorded in Labrador. This resulted in the issuance of 96 licences.
- There were 956 reserved area claims staked in Labrador. This resulted in the issuance of 1 licence.
- The remaining 13,028 claims were ground staked on the island portion of the province. This resulted in approximately 210 licences being issued.
- At the end of December 31, 1985, there were approximately 575 licences in good standing. This represents 28,461 claims.

A mineral licence is issued for a period of five years. The licence, however, may be extended for a further five years. In 1985, there were 9 licences extended.

Mining leases may be issued pursuant to a mineral licence either issued as the result of competitive staking or pursuant to a licence issued as a result of a proposal call with respect to a Private Act. In 1985, there were 7 mining leases issued.

(2) (a) In order to maintain a mineral licence in good standing, the licence holder has to carry out mineral exploration on the licence area and file an annual report of the assessment work performed. Geologists with the Mineral Rights Section review all reports received for compliance with the Act and the Regulations.

If no work report is received when due, or an insufficient amount of work has been done and the licence holder does not have sufficient excess credit to maintain the licence for another year, the licence is cancelled. The cancellation procedure maintains the competitive nature of the whole mineral land tenure process. The licence holder is first informed by registered mail that the licence is cancelled. Upon the expiration of 30 days from the date of notification, a notice is published in the Newfoundland Gazette. The notice contains all of the particulars of the licence being cancelled and sets a date when the land will come open for staking. This date is 31 clear days after the date of publication.

When licences are surrendered or expire, a similar notice is published in the Gazette.

Ninety-three (93) licences were either cancelled, surrendered or expired in 1985. The total number of claims involved was 5,287.

(b) All mineral holdings demised under any Act other than the Mineral Act are subject to an annual impost. This impost may be reduced, in any year, by carrying out and reporting mineral exploration work on the holding. The reports related to this exploration work are reviewed by the Section's geologist, and his findings are reported to the Director of Tax Compliance.

During 1985, there were a total of 125 reports reviewed. 107 of these related to mineral licences and 18 related to mineral holdings which are subject to the Mineral Impost Act. Frequently, one report covered more than one licence area or mineral holding.

(3) The Section prepares a monthly tabulation of all changes to the mineral holdings. This consists of a written report together with microfiche copies of all affected claims maps. In addition, a quarterly report listing all cancelled, expired and surrendered licences is prepared. Both reports are distributed to interested members of the exploration sector.

(4) Both the NALCO and the BRINCO exploration agreements expired in 1985. Both companies retained minor portions of their areas as either mineral claims or mining leases. The areas that have been retained are subject to the terms and conditions of the Mineral Act, 1976. In all, a total of 83,748 ha of mineral land were returned and have been opened for staking.

On December 20, 1985, the Reid Newfoundland Company and Associated Companies surrendered to the Crown virtually all of its remaining mineral holdings in the province. In all, 21 lots and portions of 11 lots were surrendered. The total area of the surrender is 166,366.20 ha. The total area presently held by Reid is 15,897.17 ha.

The surrendered area was subsequently opened for staking.

(5) During 1985, there were 4 grievances filed with the Mineral Rights Adjudication Board. Two of the grievances related to the manner of staking of a claim. One protested the issuance of a mineral licence and, the other protested the Claims Recorder's refusal to accept an application for a mineral licence.

Two of the grievances became a nullity when the application that was grieved was withdrawn. The remaining two cases were heard by the Board and decisions were rendered.

MINES BRANCH
MINERAL LANDS AND MINES DIVISION
QUARRY MATERIALS SECTION

INTRODUCTION

The quarry materials section is responsible for administration of the Quarry Materials Act (1976) and associated regulations. The main activities of this section deal with the processing and issuance of quarry permits and leases for the removal of sand, gravel and stone, peat and beach material. Permit holders range from individuals to large construction companies. The permits are issued for periods ranging from 1 to 12 months. The quarry leases are generally issued for 5-year periods.

BUDGET

The budget for the operation of the section for the 1985-86 fiscal year was $87,000.

PERSONNEL

1 Manager: John Sullivan
1 Clerk II: Joanne Janes
1 Survey Inspector: (Vacant)
1 Quarry Inspector: (Temporary)
1 Seasonal Inspector

REPORT

The total recorded production of quarry materials for 1985 was 2,453,000 metric tonnes for a value of $12,345,000. Revenues collected by way of rentals and royalties amounted to $190,900.

Peat production (both horticultural and fuel) was minimal because the areas under permit or lease are in the experimental stages to determine optimum extraction methods. The two largest peat permit areas are at Bishops Falls (60 hectares) and at Island Pond north of Gander (200 hectares). Two regular (one-year) quarry permits were issued for the removal of peat in 1985 and 30 domestic peat permits were issued, mostly in the Avalon Peninsula area for horticultural use.

Three survey inspections were done prior to the issuance of quarry leases at Port Aux Basques, Labrador City and Holyrood Access Road.

During 1985 the division employed one temporary and one seasonal quarry inspector. This was a new program to monitor quarry activities. During the field season, most quarry operations on the island were visited.

This new program has shown positive results both from the point of view of enforcing regulations and letting the industry know that monitoring of these operations is taking place. An example of this was the discovery of a major contractor doing highway upgrading without having first obtained quarry permits.

During the off-season, the temporary quarry inspector collected about $25,000 in back royalties. This was collected from contractors who had operated without permits, through information from the Department of Transportation, on contracts back to 1984 and from data received from the Annual Census of Mine Returns.

The division received thirty-five complaints concerning the removal of quarry materials. These were investigated by the R.C.M.P., at our request, to have illegal removal stopped. One case resulted in a prosecution and fine.

During the 1985 field season, beaches were surveyed. The purpose was to update our information on the condition of the beaches and to set limits on beach removal or to ban removal. These surveys were mostly on the Great Northern Peninsula, where aggregate materials are not produced commercially. The beach material is generally used for concrete aggregate and in the installation of household sewer systems.

MINES BRANCH
MINERAL LANDS AND MINES DIVISION
ENGINEERING ANALYSIS SECTION

INTRODUCTION

The mandate of Engineering Analysis is to implement policy and regulations governing the establishment, operation and termination of mining properties. The monitoring of mining operations, evaluation of new mining and processing methods, and review and analysis of related mineral policy are also within the scope of this section.

BUDGET

The budget for Engineering Analysis for fiscal year 1985-86 was $265,500.

PERSONNEL

Ferd Morrissey, P.Eng., Manager
Ned Vukomanovic, P.Eng., Mineral Development Engineer
Michael Collins, Geologist III
Paul LeGrow, Geologist I

PROJECTS

Mine Visits

The monitoring of existing mining properties is a major task of this section. All companies were visited at least twice during 1985. Particular attention was focused on Baie Verte Mines and Newfoundland Zinc Mines as those companies were having the most difficulty. Mining plans were reviewed and an assessment was made of each property. As a result of the visits, greater familiarity with the operations helps to ensure that the Province's resources are being mined in a prudent manner.

Canada - Newfoundland Mineral Development Agreement

Under this agreement a program has been developed, for both Provincial and Federal projects, to enhance the mining industry in this province.

Newfoundland is performing an assessment of tailings left from abandoned mining operations to determine if there are any economic values left in the mineral. The program started in 1985 and the Little Bay mine has been sampled. However, the results did not prove positive. Future sites to be examined include Whalesback, Gullbridge, Rambler, and Buchans. Two geologists perform the fieldwork and assess the results from chemical analysis of the samples.

The federal projects are studying increased iron ore recovery, iron ore pellet binder substitutes, a potential mineral deposit assessment, and an evaluation of aggregates for potential alkali reactivity.

Baie Verte Mines Monitoring Committee

This Committee is composed of provincial representatives from the Departments of Finance, Development and Mines and Energy appointed to review the Baie Verte operation on a continuous basis because of government financial involvement. Frequent meetings with the company provide up-to-date information and results. The major function of Engineering Analysis at these meetings is to review the technical activities of the company.

Hope Brook Deposit

From the drill logs made available to this department, orebody sections were prepared and a preliminary ore reserve estimation was completed. Estimations were also made of the capital and operating costs for the open-pit and underground mining, the heap leaching and milling.

Other Projects

- An ore reserve and grade estimation was performed on the mineralized footwall at Rambler Mines using computer techniques.
- Laboratory work was initiated to establish if a lower cost milling process could be used on the Buchans barite. The results indicated that further test work could result in a lower cost of production.
- This section managed, in conjunction with the Department of Transportation, the backfilling of four man-made ponds on Bell Island. An engineer was on site for more than one month directing the contractors.
- Recommendations were made to a quarry operator as a result of fly rock hitting a home near the pit.
- An assessment of the proposal for the production and shipping of aggregate from Lower Cove on the Port au Port Peninsula was completed.

MINES BRANCH
MINERAL LANDS AND MINES DIVISION
MINERAL POLICY AND PROJECT ANALYSIS SECTION

INTRODUCTION

The section plans and supervises the collection and compilation of comprehensive statistical data on all aspects of the provincial mining industry. It plans, directs and conducts a continuous program of data analysis and specialized projects to determine the effectiveness of government policies, to predict requirements for government servicing, to identify areas of greater potential benefit from mining, and to address the various issues and concerns of the provincial mining industry.

ECONOMICS

Summaries are maintained on all known mineral commodities which occur in the province. These summaries were updated during 1985 with the latest market and market-related information on an international, national and local level. The most recent developments in the industry and the outlook potential for each commodity were also included.

Status reports on all operating mines in the province are maintained and updated by the section on a regular basis. The section is also responsible for the preparation and distribution of an internal confidential mining update report which summarizes the latest information on the Newfoundland mining industry.

The section has developed extensive computer-based statistical and analytical capabilities for performing various forms of analyses including detailed cashflow analyses, sensitivity analyses, statistical summaries, graphing etc. Most of these capabilities were enhanced in 1985. In addition, a detailed cost-benefit analysis program was created to analyze net government benefits derived from new projects and to analyze the impact of temporary mine shutdowns and permanent closures.

The section's computer capabilities were expanded in 1985 to include both micro and mainframe computer access.

Regular monitoring of existing mining operations was conducted during the year. The two iron ore mines were monitored on a regular basis including assessment of their operating activities and evaluation of the financial status of the mines' owners.

Changes in zinc markets in 1985 prompted the section to undertake a thorough analysis of the Daniel's Harbour zinc mine, its current status and future viability. Several background documents were prepared.

Considerable resources were employed monitoring the Baie Verte Mines operation. Weekly status reports were prepared. Other assessment work included cost-benefit analyses, cashflow analyses, profit/loss projections and various statistical reports. The section is represented on a federal/provincial monitoring committee set up to deal with the Baie Verte operation.

Activities at the Flintkote gypsum operation and developments in market conditions were monitored during the year. Research work has continued to evaluate the future prospects for the two barite suppliers in the province and the potential of the North Star Cement plant as a supplier of materials to the offshore.

Evaluation of several new mining projects continued during 1985. The section conducted an economic and financial assessment of the reactivation of the St. Lawrence fluorspar mine. The Section is represented on the Burin Peninsula Development Fund Committee which has been closely monitoring the mine's progress through the preproduction and development stages.

A number of economic and financial assessments of the BP Selco gold deposit were carried out in response to proposals put forward by the company. Evaluation of the BP Selco prefeasibility study submitted by the company, as well as preparation of a series of cost-benefit analyses were also completed. This project is currently in the development stage and is scheduled to begin initial production by August/87. Approximately 250 people will be employed at the mine, which should produce roughly 1.2 million ounces of gold over its assumed 11 year life.

The section assisted in start-up preparations for a new slate quarry operation in the province. The section acted in an advisory capacity, providing background market research information and assisting in the preparation of proposals for financial support.

A number of major studies were initiated in 1985. Included in these were: limestone, sulphur and dolomite/magnesium. Other studies included, aggregates, building stone, pyrophyllite, a prefeasibility study of the potential for a new brick-making facility in western Newfoundland as well as a financial assessment of the Iron Ore Company of Canada dolomite project.

The section was directly involved in a number of other projects. It participated on a special task force on mining taxation commissioned by the Mines Ministers Conference in September, 1985. In addition, the section was responsible for analyzing the impact on the Newfoundland mining industry of a bilateral trade arrangement with the United States. A mining sector report was prepared as preliminary notes for free trade negotiations.

The section has also studied the concerns of single industry mining communities and has participated on a committee dealing with the issue. Other activities have included the analysis of water resource legislation and its effect on the mining industry, the evaluation of the Environmental Assessment Act, and the analysis and preparation of a proposal for a special exploration incentive program for the provincial mining industry.

Under the Canada/Newfoundland Mineral Development Agreement, the section has participated with representatives from Energy, Mines and Resources and from the governments of Nova Scotia and New Brunswick in cooperative studies on pyrophyllite, silica, building stone, dimension stone, industrial minerals for offshore, and barite. Input into these projects will continue through the coming year.

The section planned, organized and co-sponsored a 2 week Mineral Economics Course which was held in St. John's in November, 1985. Participants and lecturers attending the course represented various mining and related backgrounds from industry and government.

STATISTICS

Three sets of survey forms were administered by the section in 1985, namely: (a) Annual Survey of Mining Operations; (b) Annual Survey of Sand and Gravel Operators; and (c) Annual Survey of Mills. These surveys are used to form the basis of the primary database on mining statistics maintained by the section.

The 1985 survey forms were mailed out January, 1986, and replies received throughout the year. Completed forms undergo a comprehensive editing procedure prior to data entry into the statistics database.

The section hosted the annual Federal/Provincial committee meeting on mineral statistics in October, 1985, participated at a special working group meeting on census form editing notes in January, 1986, and attended the annual meeting held in Sudbury in June, 1986.

The section maintained its economic indices file of mineral commodity prices, interest rates, foreign currencies, and stock market indicators. This information is used to graph trends and produce mining industry forecasts. The graphics and reporting facilities of the computer system have been enhanced for this purpose. In addition, data obtained from Energy, Mines and Resources Canada and Statistics Canada have been used to enlarge the database.

Some modification to the existing database has been undertaken to improve uniformity with database systems outside the department.

LABRADOR OFFICE

In October, 1986, Ed Montague was appointed to our regional office in Wabush, Labrador. This office is responsible for monitoring the provincial iron ore industry and development opportunities, and for studying local activities and trends which may affect the industry.

This office monitors employee hirings at the Iron Ore Company of Canada and Wabush Mines. Current activities and future plans are discussed in regularly scheduled meetings with company officials.

This Department, along with the Department of Development, has set up a committee with Iron Ore Company of Canada representatives and a second committee with Wabush Mines representatives to study the level of local goods and services currently used by the operations and to determine opportunities for increasing this level. To extend this effort, the Department has also acted as a liaison with local suppliers in order to encourage local input growth.

PERSONNEL

Byron Hynes – Manager, Mineral Policy and Project Analysis.
Della Stevens – Senior Mineral Industry Analyst
Tony Burgess – Economist
Brian Collins – Economist
Dennis Davis – Economist

Chris Bonnell – Economist
Maurice Sheppard – Economist/Statistician
Brenda Jones – Word Processor Operator
Edmund Montague – Senior Mineral Industry Analyst (Labrador)

BUDGET

The total budget for the fiscal year 1985/86 was $358,000.

VALUE OF PRODUCTION (SHIPMENTS)

COMPANY	1984	1985(P)	1986(E)	1987(F)
Iron Ore Company of Canada	617,900,995	560,331,610	598,434,159	561,452,273
Wabush	233,519,000	214,470,000	190,878,300	194,953,230
Baie Verte	25,339,049	18,259,000	18,003,374	21,253,476
Asarco	19,588,773	–	–	–
Newfoundland Zinc	49,156,621	41,043,010	8,973,531	–
Newfoundland Minerals	1,654,409	1,733,765	1,097,473	1,522,246
Flintkote	4,548,763	6,095,945	5,297,376	6,236,152
Dunville	2,138,000	1,583,775	1,662,964	1,746,112
Hope Brook	–	–	–	**
St. Lawrence Fluorspar	–	–	–	5,000,000
Island Tile and Slate	–	–	90,000	800,000
Others*	25,378,390	26,000,000	25,000,000	25,000,000
TOTALS	979,224,000	869,517,105	849,437,177	812,963,489

P – Preliminary
E – Estimate
F – Forecast

* Includes Sand and Gravel, Stone, Cement, Brick, Peat and Barite.

** Not Available

INTRODUCTION

The Mineral Development Division is responsible for obtaining and disseminating information on the geology and mineral resources of Newfoundland. The division functions as a geological survey with two major objectives:

1. to promote exploration and development of the province's mineral resources by providing basic geoscientific data indicating areas where mineral deposits may be found, and
2. to provide the geoscientific data necessary for proper management of the province's mineral resources.

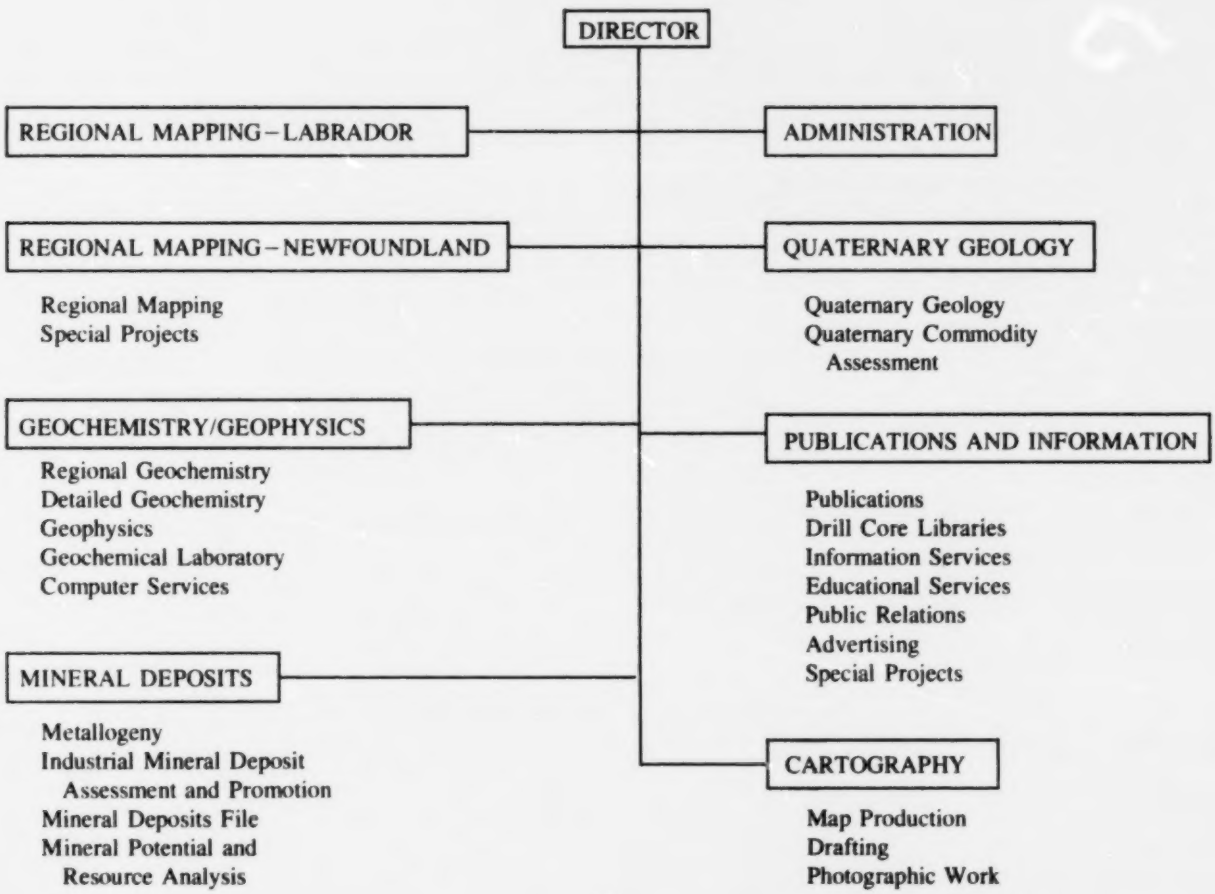
In fulfilling its role, the division carries out field and office programs in a number of disciplines related to mineral resource development. These include geological, geophysical and geochemical surveys, evaluation of mineral deposits and resource development potential, and development and maintenance of mineral resource information systems for government, the mineral exploration industry and the general public.

ORGANIZATION AND STAFF

The Mineral Development Division is composed of the director's office and eight sections: Regional Mapping–Newfoundland, Regional Mapping–Labrador, Geochemistry, Mineral Deposits, Quaternary Geology, Publications and Information, Cartography and Administration (Figure I).

Figure I

MINERAL DEVELOPMENT DIVISION
ORGANIZATION AND RESPONSIBILITIES



The director is responsible for general administration of the division, including budgeting, organization, program planning, and coordination of activities.

The Regional Mapping Sections carry out programs of geological mapping and related studies, aimed at the provision of reliable, comprehensive geological maps and reports for all areas of the province, with data accumulated in sufficient detail to allow competitive mineral exploration to proceed. In general, mapping is carried out for publication at the 1:50,000 scale in Newfoundland and at the 1:100,000 scale in Labrador. Maps at these scales are available for approximately 50 percent of Newfoundland and 45 percent of Labrador.

The Geochemistry Section carries out regional and detailed geochemical field surveys. Regional surveys to date have concentrated on reconnaissance lake sediment geochemistry, in order to provide a rapid guide to mineral potential over large areas. All of Newfoundland and about 75 percent of Labrador have been surveyed in this manner. Detailed surveys are carried out in areas indicated by the regional data. The section also carries out regional and detailed geophysical surveys, to assist mineral exploration and to provide support for the other field programs of the Division. The section is also responsible for the computer unit, which coordinates computerization of data from all sections of the division, and for the geochemical laboratory, which performs the assays and analyses required in support of field programs.

The Mineral Deposits Section is responsible for metallogenic and mineral deposit studies, for assessment of industrial mineral deposits, and for maintenance of the mineral deposits file. Metallogenic and mineral deposit studies are undertaken to increase our knowledge of the geological environments in which mineral deposits occur and, thus, provide guidelines which the mineral exploration industry can use to increase the effectiveness of the search for new deposits. The emphasis is slightly different in the industrial mineral area, where private industry is reluctant to spend exploration dollars; in this area, the section strives to identify deposits with immediate potential for development, and to promote these opportunities to the business community. The section also maintains a mineral deposits file, which consists of manual and computerized files with relevant data on all known mineral occurrences in the province, as well as a series of mineral occurrence maps for the province.

The Quaternary Geology Section is responsible for all research related to the Quaternary (surficial) deposits of the province. The section carries out a surficial mapping program to delineate the distribution of surficial materials and to determine the effects of the various glacial flow regimes on the interpretation of data from exploration programs. The section is also involved in a program to map and evaluate the mineral aggregate resources of the province, particularly along transportation routes, in municipal areas, and in areas of proposed major developments.

The Publications and Information Section maintains geological files and drill core libraries and makes published and unpublished information on the geology and mineral resources of the province available to the public. The section edits and prepares for publication reports emanating from the division's field programs.

The Cartographic Section prepares all maps and figures required by the division.

The Administration Section provides accounting services to the division, maintains field equipment stores and vehicles, and provides logistical and communication support for field parties.

At the end of 1985, the perma-nent and temporary staff of the division numbered 76 persons, distributed as indicated in Table I. Of these, 23 of the permanent staff and 20 of the temporary staff are geoscientists. A total of 65 seasonal assistants were employed on field parties in 1985.

FUNDING

Mineral Development Division's budget for the 1985-1986 fiscal year was $4.4 million (net), allocated as outlined in Table II.

Much of the work of the Division in 1985-1986 was funded under the 1984-1989 Canada-Newfoundland Subsidiary Agreement on Mineral Development, which was described in last year's report. The jointly funded section of the Agreement provided some 1.6 million of the Division's total budget; $500,000 was expended under the provincially funded section.

The Division's field program in 1985 is summarized in Table III and Fig. II and described more fully in the reports of the individual sections.

Table I

Mineral Development Division Staff, 1985

	Permanent	Temporary	Total
Director's Office	2	0	2
Administration	3	2	5
Labrador Mapping	4	3	7
Newfoundland Mapping	3	3	6
Geochemistry	10	9	19
Mineral Deposits	4	7	11
Quaternary Geology	2	9	11
Publications and Information	8	8	16
Cartography	3	1	4
	39	42	81

Table II

Mineral Development Division Budget, 1985-1986

	Gross Expenditure	Revenue	Net Expenditure
Administration (includes Director's office	$ 276,300	$ 20,400	$ 255,900
Regional Mapping	1,723,200	503,900	1,219,300
Geochemistry	1,195,900	91,100	1,104,800
Mineral Deposits	701,200	140,800	560,400
Quaternary Geology	671,600	-	671,600
Publications and Information (includes Cartography)	678,500	65,500	613,000
Totals	$5,246,700	$821,700	$4,425,000

Table III

Summary of 1985 Field Program
(Numbers refer to Fig. II)

No.	Project Geologist	Project Name (and scale)	1985 NTS Area
A. Geological Mapping Sections			
1.	S. Colman-Sadd	Bay d'Espoir project (1:50K)	12A/7
2.	I. Knight	Daniel's Harbour project (1:50K)	12I/15,16; 12P/1,2
3.	D. Boyce	Biostratigraphic studies	
4.	R. Wardle	Goose Bay project (1:100K)	13F/7,8
5.	B. Ryan	Strange Lake project (1:100K)	14D/1,8
6.	C. Gower	Eastern Grenville project (1:100K)	13H/SE
7.	G. Nunn	Western Grenville project (1:100K)	23A/SE, 22P/15
8.	A. Kerr	Lithogeochemistry of granitoid rocks, Makkovik area	13J/13, 14, 15; 13O/2,3
B. Geochemistry–Geophysics Section			
9.	J. Butler	Geochemical follow-up, Labrador Trough	
10.	J. McConnell	Geochemical follow-up, granitoid terranes	
11.	J. Tod	Geophysical support–magnetics and EM	
12.	H. Miller	Geophysical support–gravity	
C. Mineral Deposits Section			
13.	B. Kean	Metallogeny, volcanogenic sulphide deposits, Victoria Lake area	12A/9,10,11,16
14.	J. Tuach	Metallogeny of Newfoundland granitoids	11O/9,15,16; 12H/10,15
15.	C. O'Driscoll and A. Huard	Metallogeny, Avalon Zone	1M/12, 1M/16
16.	A. Howse	Industrial Minerals Survey, western Newfoundland	
17.	R. Miller	Metallogeny of Labrador granitoids	24A/8, 13L/1
18.	P. Dean and J. Meyer	Industrial Minerals Survey, Labrador	
D. Quaternary Geology Section			
19.	B. Sparkes	Quaternary Mapping, South Coast (1:50K)	11P/13; 12A/4
20.	M. Mihychuk	Quaternary Mapping, Daniel's Hr.	12I, 12H
21.	D. Bragg	Bedrock Aggregate Inventory, Avalon Peninsula	1L, 1M
22.	M. Ricketts	Detailed Aggregate Assessment, Placentia Bay	1M/3, 1M/16
23.	M. Batterson	Quaternary Mapping, Letitia Lake (1:50K)	
E. Publications and Information Section			
24.	A. Harris	Drill Core Collection and Storage	

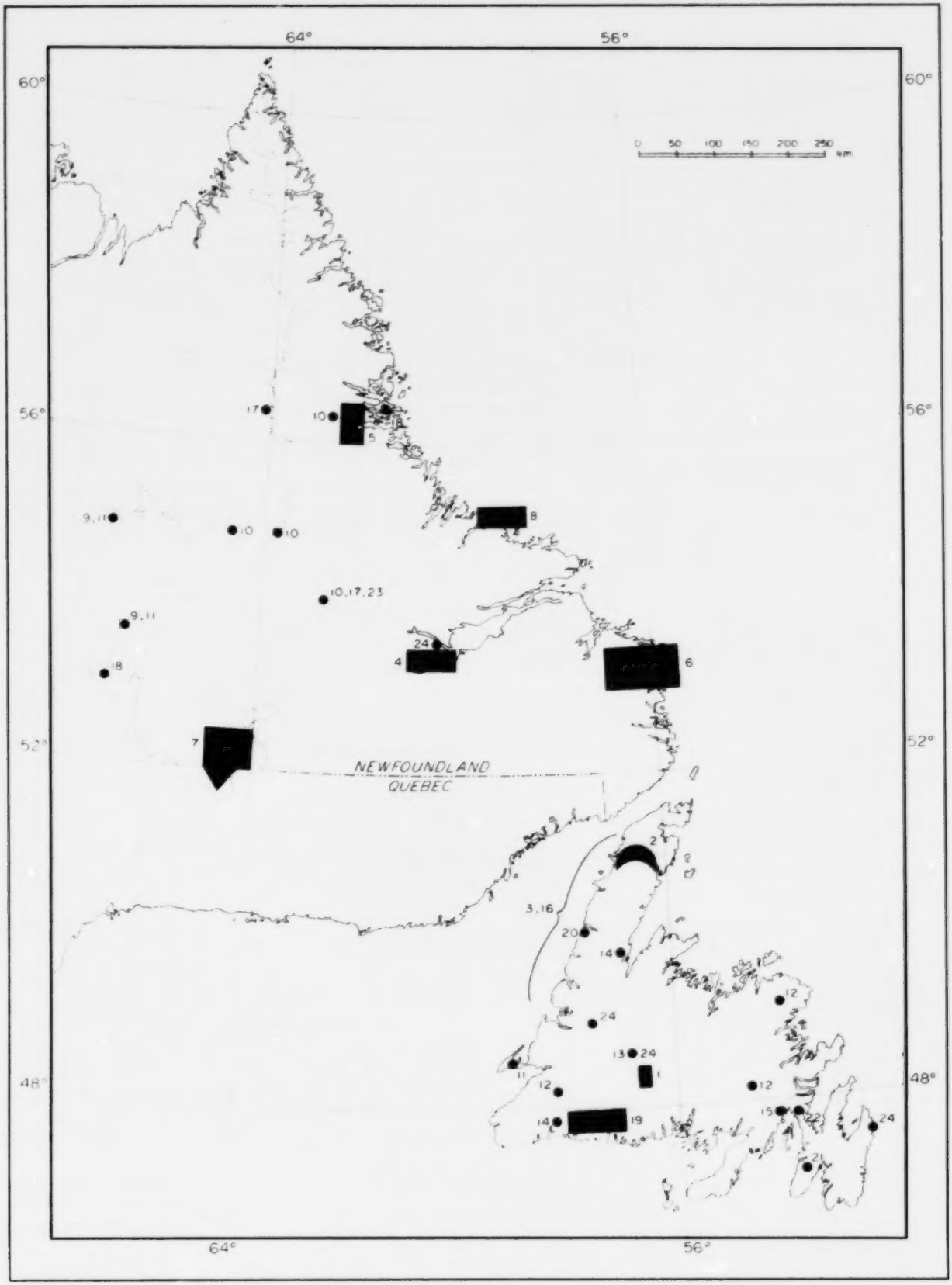
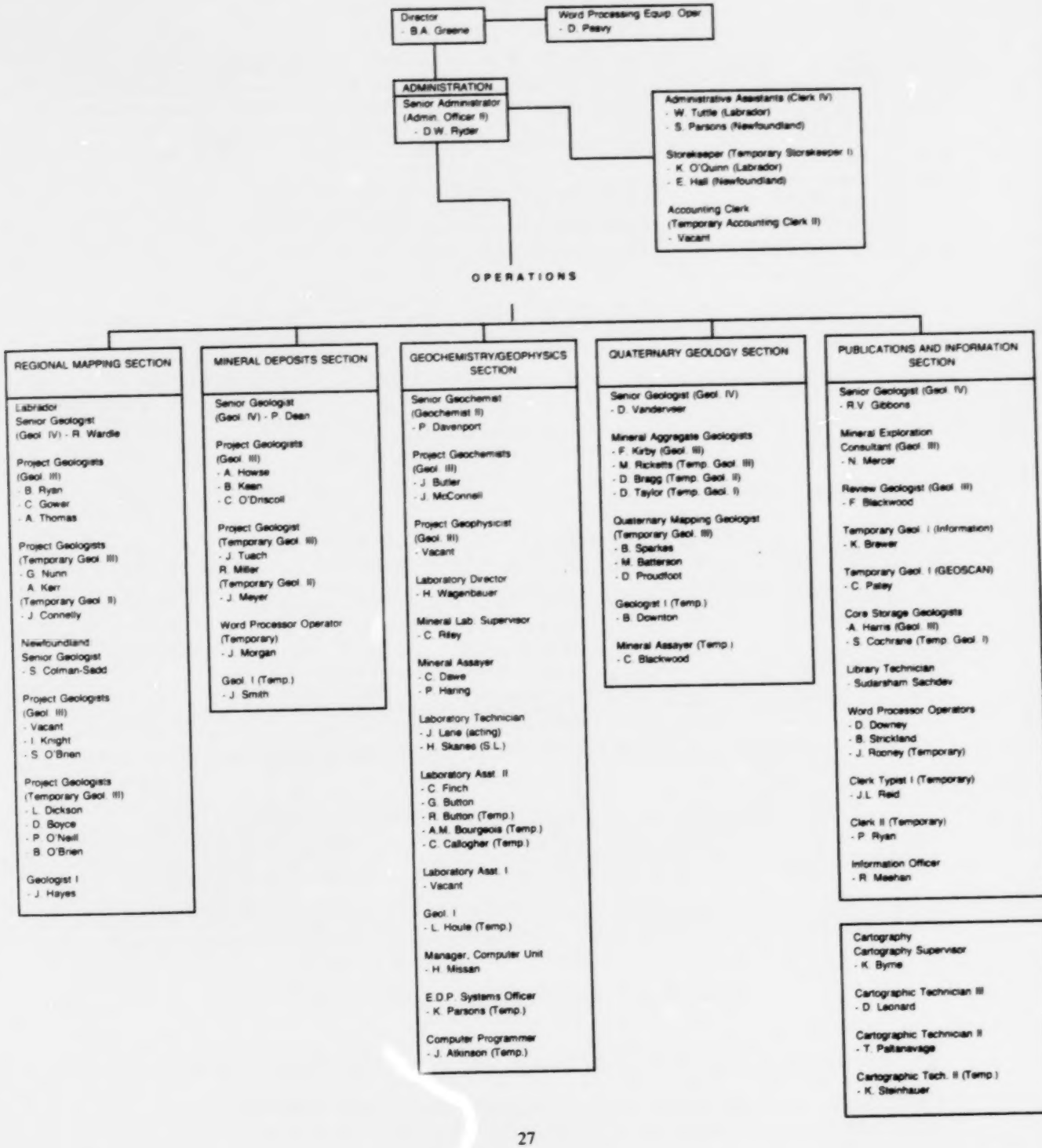


Figure II: *Distribution of field projects, 1985 (Numbers refer to Table III).*

DEPARTMENT OF MINES AND ENERGY
MINERAL DEVELOPMENT DIVISION
ORGANIZATION AND STAFFING



MINES BRANCH
MINERAL DEVELOPMENT DIVISION
QUATERNARY GEOLOGY SECTION

INTRODUCTION

The Quaternary Geology Section (formerly called the Environmental Geology Section) consists of a senior geologist (D.G. Vanderveer); one permanent project geologist (F.T. Kirby); five temporary project geologists (B.G. Sparkes, M.G. Ricketts, D.J. Bragg, D. Proudfoot and M.J. Batterson); two geologists (B. Downton and D. Taylor), and a mineral assayer (laboratory technician) (S.C. Blackwood) and included a seasonal laboratory assistant (Greg Stapleton, Sept. 1985 to Mar. 1986). The section has considerable interaction with other government departments through the provision of Quaternary and aggregate mapping and raw data and as a primary contact for municipal planners and consultants requiring resource or geotechnical data in support of road construction, water and sewer projects, municipal developments or other major developments (e.g. construction of offshore supply and service bases or concrete platforms). The mineral exploration industry is increasingly using the Quaternary mapping data in their exploration programs when tracing mineralized float back to sources in bedrock.

BUDGET

The total 1985/86 budget for the section was $750,557, of which $297,120 was the provincial contribution under the Canada–Newfoundland Mineral Development Agreement. Of the total, $234,412 was devoted to aggregate assessments, $56,164 to Quaternary mapping, and the remainder $149,981 to special projects, project supervision and laboratory support.

PROJECT SUMMARIES

Special Projects/Project Supervision
Project Coordinator: D.G. Vanderveer, Senior Geologist

(A) Quaternary Mapping, Moran Heights, Labrador (13K/10)

In consultation with Saarberg Interplan, detailed field work was continued in the Moran Heights area (13K/10, southwest corner) of Labrador, an area containing numerous boulders mineralized with uranium, but with no known source in bedrock.

Till sampling, pebble lithology data, and geochemistry are being used to assist in the definition of the bedrock source of the mineralization and to verify the direction and nature of the glacial dispersal.

(B) Interdepartmental Liaison

The senior geologist is the department's representative for referral of land use proposals (through the Interdepartmental Land Use Committee) and for processing Crown land referrals (345 processed in 1985). He also represented the department on numerous Environmental Assessment Committees, the Rehabilitation (of Disturbed Areas) Committee, and the Environmental Surveillance Committee during 1985.

Letitia Lake area, Labrador–Quaternary Exploration and Surficial Mapping
Project Geologist: M. Batterson

Quaternary Mapping was located in the vicinity of the Mann #1 prospect of beryllium in north-central Labrador.

Quaternary mapping was aimed at determining the regional Quaternary setting of the Mann and Two Ton Lake deposits in an area of discontinuous overburden. Till geochemistry, till lithology, and surficial mapping were to be used to determine the distribution of glacial overburden and to define dispersal fans from bedrock sources.

Drift Prospecting in the Daniels Harbour area, Newfoundland
Project Geologist: M. Mihychuk

The Daniels Harbour area in northwestern Newfoundland was selected for detailed study of glacial stratigraphy, sedimentology, and geochemistry. The aim of the work in 1985 was to establish the dispersal patterns from a known source, the Trapper Prospect, and to determine if the origin of massive sphalerite float located in the area to the west of the Trapper had a similar source.

Sample site intervals were generally evenly spaced over the study area. Till soil profile sampling of the B, B-C and C horizons, pebble collecting, boulder counting and bedrock sampling were done where possible.

Results from the 1985 field season have identified a complex of stratigraphic and glacial dispersal patterns that are being further defined in the 1986 field season under a project lead by Dr. D. Proudfoot.

South-West Newfoundland – Quaternary Mapping Project
Project Geologist: B.G. Sparkes

Quaternary mapping was conducted on 12A/4 and 11P/13 in south-west Newfoundland in support of current exploration programs (notably for gold). Landform classification, and glacial flow feature maps as well as till geochemistry distribution maps are being compiled. This program will determine the effectiveness of till as an exploration medium for gold and what factors within the glacial environment need to be considered. Some recommendations will be made with regard to the interpretation of soil or till geochemical data for this area of south coast Newfoundland.

Maintainance Aggregate Resources Inventory
Geologist: Bev Downton

The section has been collecting aggregate resource data throughout the province since 1975 (Kirby et al., 1983). To date, approximately 13,000 samples have been collected.

The computerized database management system (Aggregate Resources Inventory System) selected for the manipulation of the data is being converted to an inhouse system.

This project is responsible for dealing with requests from companies and individuals for information on aggregate resources and Quaternary mapping and screening of Crown land application referrals (345 in 1985/86). Also conducted was drafting and updating of the 1:50,000 and 1:250,000 aggregate maps. Compilation of a summary map and report of geochronology dates (Carbon-14) for Newfoundland and Labrador and 1:250,000 scale glacial flow feature maps are ongoing major tasks.

Aggregate Assessments of Potential Sites of Concrete Platform Construction
Project Geologist: M.G. Ricketts

The study was conducted as an aid in the selection of possible quarry sites to supply unconsolidated aggregates to support the possible construction of concrete platforms for production of Hibernia oil. Each platform would require up to 150,000 m^3 or more of concrete grade sand and gravels. The area selected surrounds the northern Placentia Bay area, which has abundant granular materials adjacent to tide water.

The main objective of the survey was to determine the quantity and quality of unconsolidated aggregate material. Maps prepared from a study of aerial photographs of the northern Placentia Bay area were used as a guide to delineate and sample areas of potential aggregates. Water depths were also estimated in coastal estuary areas to assess the viability of barging. Bulk samples were collected to assess the deposits for alkali reactivity.

Aggregate Assessment of Bedrock for use in Concrete Platform Construction
Project Geologist: D.J. Bragg

The Bedrock Aggregate Resource Project objective was to map potential bedrock aggregate resources in and around the northern Placentia Bay area, particularly near areas designated for possible concrete platform construction. A number of potential rock quarries were identified and sampled. Bulk samples were also taken for concrete alkali reactivity testing.

This mapping was extended into the central Avalon-Bay de Verde Peninsula area to assess available bedrock resources for use in local construction projects. This latter area lacks appreciable unconsolidated aggregates or readily apparent sources of bedrock for use as armour stone to protect coastal structures.

Detailed Aggregate Resources Project – Insular Newfoundland
Project Geologist: F.T. Kirby

The aim of the project is to provide detailed information on aggregate resources within municipal and other planning areas so that planners and local authorities are aware of the aggregate resources within their jurisdiction.

Aggregates are an essential component in community or industrial development. Therefore, governments and other planning agencies must recognize their importance and protect them for appropriate uses, especially since high quality aggregates are generally in short supply in most municipal areas.

Work in 1985 was confined to office compilation of field work done in previous seasons in preparation for formal publication of results. All aggregate data are being continuously provided to the Department of Municipal Affairs for inclusion into various municipal plans and to assist other major industrial developments. Data are also made available to other government departments, and contracting firms or developers and any other organizations requiring such data.

Quarry Inspections/Data Compilation
Geologist: Dave Taylor

As a complement to the various aggregate inventories and in an attempt to instill a greater awareness of resource management and rehabilitation of quarry areas in quarry operators, this project was devoted to quarry inspections, primarily in western Newfoundland. During routine inspections of existing licensed operations, strategies for rehabilitation and resource management were discussed with the aggregate producers in terms of the quarry permit requirements. Unlicensed operations were located and steps taken to ensure the operations met the legislative requirements.

Laboratory Support
Mineral Analyst: Christine Blackwood

The Quaternary Geology Section has operated a particle size analyses laboratory at the mineral Laboratory at the Howley Building for approximately ten years.

In 1985/86, the laboratory was operated with one full time (temporary) staff member (C. Blackwood) and one term (6 month) laboratory assistant (Greg Stapleton). The objective is to conduct grain-size analyses on samples submitted by the various Quaternary Mapping and Aggregate Resource Inventory projects. These analyses consist of both wet and dry sieve techniques for coarse size particles (greater than 0.063 mm) and pipette and electronic particle (Coulter) analyses of fine particles (less than 0.063 mm).

Project Geologist	Location	Activity	Temporary Personnel	Budget	Source of Funds
Doug Vanderveer (P) Senior Geologist	Nfld/Lab General	Project Supervision Quaternary Mapping	1	113,451[1]	Provincial
Byron Sparkes (T)	South-West Newfoundland	Quaternary Mapping	3	134,509	Provincial
Martin Batterson (T)	Letitia Lk., Labrador	Quaternary Mapping	4	121,860	CNMDA Joint **
Maryann Mihychuk*	Daniel's Hr.	Drift Prospecting	3	79,795	Provincial
Fred Kirby (P)	Municipal Plan Areas	Detailed Municipal Aggregate Survey	1	74,510[1]	Provincial
Jerry Ricketts (T)	Placentia Bay	Aggregates for Concrete Platforms	1	75,260	CNMDA Nfld **
Daniel Bragg (T)	Placentia Bay, Avalon P.	Bedrock Aggregates for Concrete Platforms	1	84,642[1]	Provincial
Beverly Downton (T)	Nfld. ¿ Lab. General	Geochronology Map and Date Compilation	-	18,500 (funded as part of 1 above	Provincial
Dave Taylor (T)	Nfld. General	Quarry Inspections Data Compilations	-	25,548 (funded as part of 1 above	Provincial
Christine Blackwood (T)	St. John's	Lab Support	1	46,530	Provincial

(P) permanent, (T) temporary

* Resigned March, 1986. Replaced by D. Proudfoot.

** Canada-Newfoundland Mineral Development Agreement. CNMDA 'Joint' project was jointly funded by Canada and Newfoundland; CNMDA 'Nfld' project was funded under the agreement by Newfoundland.

INTRODUCTION

The year 1985/86 was a period of continuing the new initiatives started in 1984 with the signing of the Canada/Newfoundland Mineral Development Agreement. Programs which were initiated in 1984/85 were continued and expanded. A new program was started in granite-related metallogeny, focusing on gold deposits during the 1985 field season. New industrial mineral programs were initiated in marble deposits in Newfoundland and labradorite dimension stone in Labrador. The Industrial Minerals Program in western Labrador focused on dolomite and a deposit discovered near Wabush in 1984 was successfully put into production in 1986 by the Iron Ore Company of Canada.

INDUSTRIAL MINERALS

Marble

A new program was initiated in 1985 to evaluate the marble deposits of Newfoundland. There is an increasing demand for white marble for use as mineral fillers in the paint, plastics and paper industries, particularly in North America. Reconnaissance field surveys were conducted by Ambrose Howse in western Newfoundland with focus on the White Bay, Canada Bay and Corner Brook areas. Several new white marble prospects were discovered north of Canada Bay. Chemical and physical analyses were carried out on all the marble prospects sampled. The results of these analyses indicate that the new prospects discovered at Penny's Pond, north of Roddickton are very high quality marble and will meet the specifications of the mineral filler industries. These prospects will be further evaluated by drilling in the summer of 1986.

Dolomite in Labrador West

In 1984, a reconnaissance mapping and sampling program in the area of Wabush Lake delineated several zones of low silica, high magnesia dolomite which could potentially be used in making self-fluxing pellets at Iron Ore Company of Canada's Carol Project in Labrador City. Two of the deposits were designated as Exempt Mineral Lands (E.M.L.) and removed from staking, and in 1985 a total of nine holes (183 m of core) were drilled. The drilling program and resulting analyses confirmed the presence of high quality dolomite at the two localities known as Javelin Road South and Leila Wynne Lake.

In November, 1985, the Department of Mines and Energy invited proposals for further exploration and development of the dolomite deposits in the two Exempt Mineral Land areas. In January, 1986, the Department accepted a proposal from the Iron Ore Company of Canada to conduct further exploration and drilling on both areas. Iron Ore Company of Canada began drilling on the Javelin Road South prospect in February, 1986, and by the end of March had outlined approximately 365,000 tonnes of high quality dolomite. A decision to mine dolomite from one of these zones was made immediately. During April and May, the site was prepared and mining began in June. Approximately 100,000 tonnes of dolomite were mined by Iron Ore Company of Canada from an open pit operation designated "the Albert Lake Quarry". The mined material was crushed and trucked by local contractors to the pellet plant in Labrador City where it was mixed with imported limestone and iron ore concentrate to make fluxed pellets. Approximately 30 people were employed during the production period. Iron Ore Company of Canada continued exploration and drilling in the Albert Lake and Leila Wynne Lake areas during 1986.

The significance of the production of this dolomite in Labrador West is not so much in the tonnage, value of production or number of people employed, but in that it allows the efficient and economic production of self-fluxing pellets by the Iron Ore Company of Canada. The successful production of self-fluxing pellets by Iron Ore Company of Canada will enable the company to be more competitive in the market place thus assuring the longer term viability of the whole Carol Project in Labrador West.

Labrador Silica

In 1984, a program was initiated to evaluate the silica deposits of Labrador. The program initially focused on the deposits near Labrador City because of the existing mining industry and infrastructure in the area and the availability of hydroelectricity for development of silica-based industries. The reconnaissance sampling outlined several large deposits of high purity silica within the Aphebian Wishart Quartzite Formation. The best deposits contain greater than 99.5 percent SiO_2 and the potential for large tonnages of high quality material is excellent. Two prospects will be selected for drilling and detailed assessment in 1986 and mineral processing studies will be undertaken to evaluate methods of removing mineral impurities from the silica.

In 1985, the large quartz veins near Big Pond, 25 km southwest of Mary's Harbour were mapped and sampled. Preliminary results indicate that the average compositions of the steeply dipping veins are generally less than 97 percent SiO_2. Thus these veins cannot be considered as high quality silica deposits at this time. Given the low quality and the lack of infrastructure and hydroelectricity in the area, no additional work is planned on these deposits.

Labradorite - Dimension Stone

New initiatives were made by the Mineral Deposits Section in 1985 to assist the Labrador Innuit Development Corporation (LIDC) in reactivating the labradorite quarry at Tabor Island, near Nain. Part of this effort was designed to find uses for the labradorite which is not of gem quality and is presently considered as waste material. Several tonnes of this material were shipped from Nain to St. John's where it was crushed into aggregate and screened into various size fractions.

The crushed aggregate was tested for use in various building materials including terrazzo, open cast concrete panels and epoxy-backed panels. The open cast panels using labradorite as an aggregate proved to be very attractive and have generated interest by local architects and builders as well as by Japanese companies. Work is ongoing towards using labradorite aggregate panels in a public building as a demonstration of the quality and ascetics of the stone.

In 1985, the Mineral Deposits Section invited Suzie Nantel, a dimension stone geologist with the Quebec Ministere de l'Energie et des Resources, to the Nain area to assist in a preliminary evaluation of the Nain anorthosite as a source of dimension stone. Dimension stone produced from similar anorthosites in Scandanavia commands a high price and is marketed internationally.

A preliminary survey by Ms. Nantel, Jamie Meyer and Paul Dean located several potential quarry sites suitable for the quarrying of large blocks of dimension stone containing colored chatoyant labradorite. These sites will be investigated in detail in 1986.

METALLOGENIC STUDIES

Metallogenic studies relate mineral occurrences and deposits in specific areas to the regional or local geology by focusing directly on mineral deposits and geological units with high mineral potential. Such studies develop models for the mineralizing processes and provide scientific guidelines for mineral exploration. Metallogenic studies were started in 1979 on the base metal sulphide deposits of the Central Volcanic Belt of Newfoundland.

Projects completed or in progress are (1) the lead-zinc-silver-gold deposits of the Bay d'Espoir and La Poile areas (H. Scott Swinden); (2) the copper deposits of the Great Burnt Lake Area (H. Scott Swinden); (3) the copper-gold deposits of the Green Bay - Halls Bay area (Baxter Kean); (4) the Betts Cove copper deposit (Cindy Saunders); (5) the base metal deposits of central Notre Dame Bay (H. Scott Swinden); (6) the tin-tungsten-molybdenum prospects north of Fortune Bay (John Tuach); (7) an assessment of the mineral potential of sedimentary basins in Newfoundland (Paul Dean and Jamie Meyer); (8) the zirconium-niobium-yttrium-beryllium-rare earths deposits at Strange Lake and Letitia Lake, Labrador (Randy Miller); (9) the gold-bearing volcanic rocks of the Burin Peninsula (Alan Huard and Cyril O'Driscoll) and (10) the base metal sulphide deposits south of Red Indian Lake, Newfoundland (Baxter Kean).

In 1985, a new project was initiated under the Canada/Newfoundland Mineral Development Agreement to document the granite-related mineral deposits in Newfoundland. The project geologist, John Tuach, concentrated on the gold deposits of western White Bay and southwestern Newfoundland. A significant new gold prospect in Precambrian rocks near Jacksons Arm was documented publically for the first time.

All of the completed and ongoing metallogenic projects have been successful in attracting new exploration projects by the mineral industry and in encouraging and providing scientific support for ongoing exploration and development programs. For example, the metallogenic studies conducted by Scott Swinden in the Bay d'Espoir - La Poile areas in 1979-81 contributed to an increased level of exploration activity which has resulted in the discovery of several new gold prospects including the Hope Brook Gold Zone.

MINERAL INVENTORY

The Mineral Occurrence Data System (MODS) is designed to offer an efficient information service on all mineral occurrences, prospects and mines in Newfoundland and Labrador. It is a two-part system comprising a mineral inventory file and a computerized mineral index.

The mineral inventory file consists of individual mineral occurrence descriptions which summarize all the significant information on known mineral occurrences in the province. The descriptions may be of a producing mine or a small mineral indication. The file is used by mineral exploration companies who need quick and accurate summaries of available data on specific mineral occurrences or on areas and types of mineral occurrences. The file is also used daily by the Department for input into land use planning, environment impact assessments, and crown land referrals.

In 1985, the mineral occurrence files for Newfoundland were complete and the majority of the files for western Labrador were also complete. Two new mineral occurrence maps at 1:250,000 scale were published for the Port Saunders Area (Map 85-30) and the Avalon Peninsula (Map 85-62). The project geologist for MODS, Cyril O'Driscoll, represented the Department and gave a presentation on the Mineral Occurrence Data System at a National Workshop on mineral inventories in Toronto.

Computerized Mineral Index

The computerized mineral index contains coded and free-format data, selectively extracted from the Mineral Inventory File. The purpose of the index is to efficiently organize important data on the mineral occurrences so that a wide variety of retrievals can be made using the powerful sorting capabilities of a computer system. The file can be accessed through terminals at the Department's offices at 95 Bonaventure Avenue, St. John's.

MINERAL DEPOSITS SECTION

Paul L. Dean
Senior Geologist

Ambrose Howse
Project Geologist
Industrial Minerals
and Coal

Baxter Kean
Project Geologist
Central Newfoundland
Metallogeny

John Tuach
Project Geologist
Granite Related Metallogeny
and Gold

Randy Miller
Project Geologist
Labrador Metallogeny

Jamie Meyer
Project Geologist
Labrador Industrial
Minerals

Cyril O'Driscoll
Project Geologist
Mineral Inventory
and Avalon Zone
Mineral Deposits

Kevin Brewer
Heather Rideout
Janice Smith
Mineral Inventory
Geologists

Judy Morgan
Word Processor and
Inventory Librarian

Allan Huard
Seasonal Assistant
Geologist, Avalon Zone
Metallogeny

INTRODUCTION

The geochemistry and geophysics section is responsible for conducting geochemical and geophysical surveys in Newfoundland and Labrador to provide data for mineral exploration and for mineral resource appraisal. In addition, the section carries out most geochemical analyses for the Mineral Development Division, and provides data processing support to the Division through the computer unit. The organization of the Section is shown in Figure 1.

Activities

Geochemical Surveys

Work in 1985 was concentrated in Labrador. John McConnell carried out geochemical surveys over four areas of granitoid rocks (Figure 2) which were identified as potentially mineralized in the regional reconnaissance geochemical survey of Labrador. The surveys included the collection of samples of lake sediment and water, stream sediment and water, soil, till and rock. Laboratory analysis and data interpretation from these surveys is continuing.

James Butler carried out similar geochemical surveys in three areas in western Labrador (Figure 2). These areas are underlain by dominantly sedimentary rocks of the Labrador Trough, and all of the areas contained anomalously high base-metal values (zinc usually with copper and lead) in the regional reconnaissance geochemical survey of Labrador. The purpose of these studies, which are continuing, is to determine the source of these high metal values and to evaluate the base-metal mineral potential of the area.

In October 1985 the results were released of a preliminary study by John McConnell which demonstrated the usefulness of gold in lake sediment as an exploration technique for use in the search for gold in Newfoundland. The Hope Brook deposit and nearby showings in southwestern Newfoundland give a positive response by showing elevated gold values in lake sediment nearby. Work on geochemical exploration for gold in continuing.

One of the activities of the section is coordination of geochemical surveys in the Province carried out by the Geological Survey of Canada (G.S.C.). Lake sediment and water sampling was completed in 1985 by the G.S.C. in all of Labrador where lakes are sufficiently abundant – to 58°30'N, making this province the first in Canada to achieve almost total regional geochemical coverage. Complete coverage will be achieved in 1986 using stream sediment and water samples in the Torngat Mountains of Labrador.

Geophysical Surveys

Joan Tod conducted geophysical surveys in two areas of Newfoundland (Figure 2). The first study was a VLF-EM and magnetic survey over the unconformable contact between the Carboniferous Codroy Group limestones and the Ordovician Table Head Group carbonates. This contact is in places mineralized with lead and zinc sulphides (e.g. Boswarlos) and with the barium and strontium minerals barite and celesite (e.g. the Ronan deposit). The study demonstrated that VLF-EM is an effective method of pin-pointing this contact where it is concealed by drift. The second study also employed VLF-EM and magnetics, this time in the Badger map area (Figure 2). Its purpose was to verify the accuracy of the airborne VLF-EM results from a G.S.C. survey as a method of mapping graphitic shale marker horizons beneath glacial drift. The accuracy and effectiveness of the airborne VLF-EM data in delineating conductive shale units was confirmed by the ground VLF-EM results. The usefulness of graphitic shale as stratigraphic markers is less certain, however, especially where drift cover is extensive and structure complex. The graphite content of shale marker beds – and hence their VLF-EM response – was shown to vary, and there are more than one conductive shale unit in the area. Joan Tod also provided geological interpretations of aeromagnetic data for several project geologists throughout the year.

Hugh Miller joined the section during the year to carry out gravity surveys while on sabbatical leave from Memorial University of Newfoundland. Gravity surveys were conducted in four areas (Figure 2) – over the Ackley Granite in southern Newfoundland; at the southwest end of Middle Ridge Granite; in northeastern Newfoundland; and along the Burgeo Road. The results of these studies combined with aeromagnetic data have provided new insights into the structure and nature of the earth's crust, particularly in northeastern Newfoundland and around the Ackley Granite.

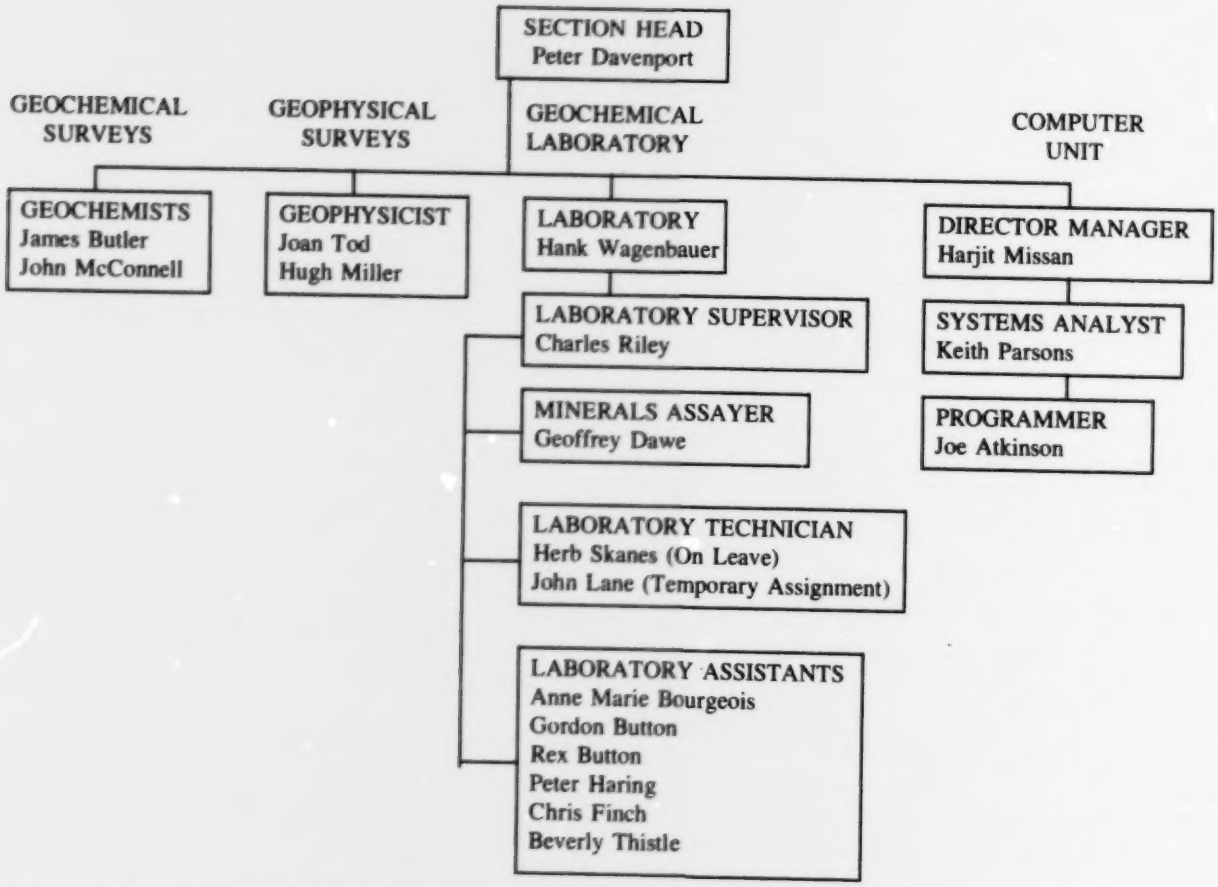


Figure 1: *Organization of the Geochemistry and Geophysics Section, December 31, 1985.*

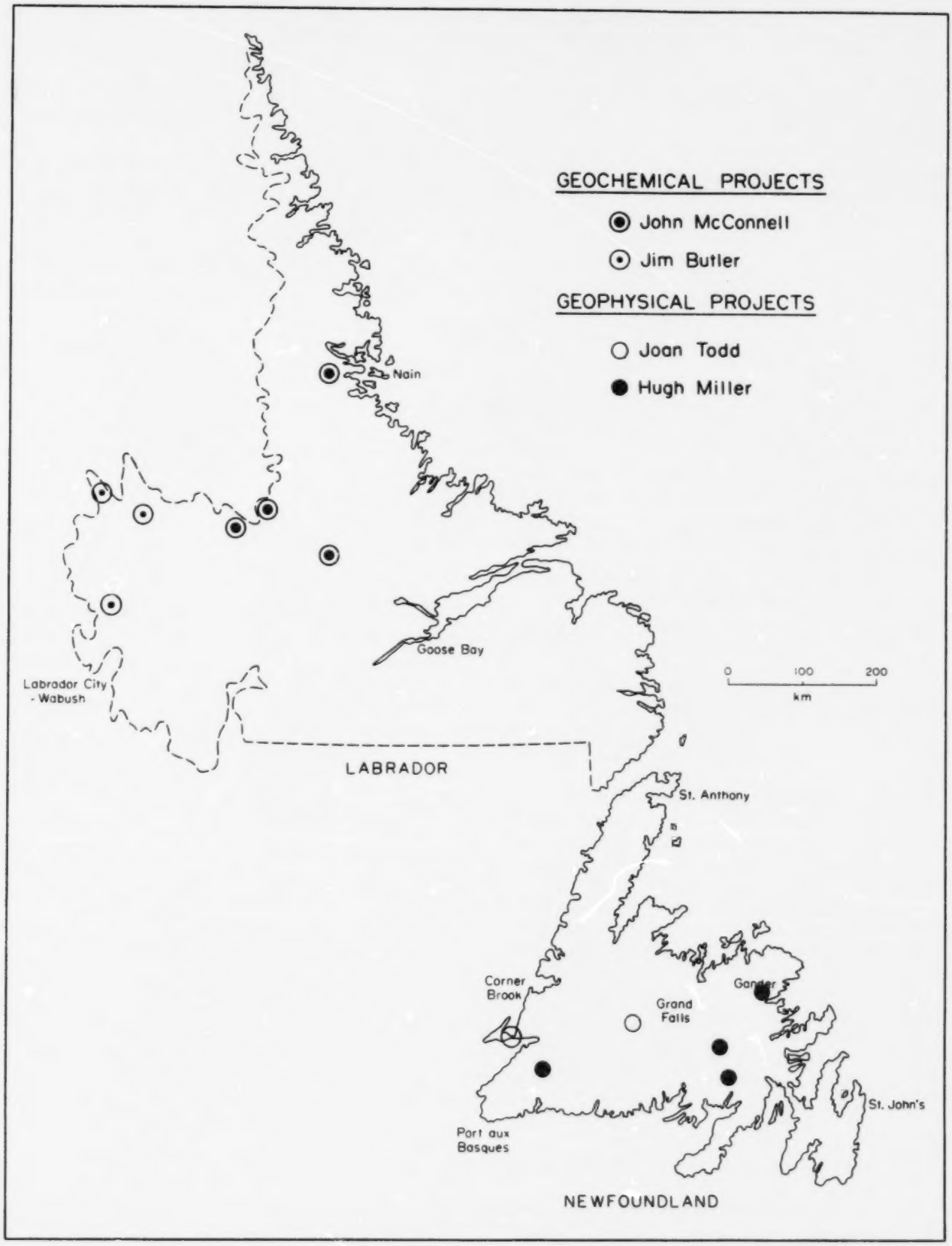


Figure 2. *Location of field projects in 1985, Geochemistry and Geophysics Section.*

Computer Unit

This unit, under the direction of Harjit Missan, continued to coordinate computer services for data processing for the Mineral Development Division, including the provision of terminals to Newfoundland and Labrador Computer Services. During the year discussions were held with the Division's geoscientists to determine what improvements are needed to the present arrangement of time-sharing on a mainframe computer. As a result a proposal was drawn up to acquire a mini-computer with accessories such as graphics, terminals, a large plotter, a tape drive and a large hard disk drive, as well as five microcomputers. The microcomputers are to be linked to the minicomputer, but physically disseminated to the five sections involved in geoscientific surveys.

Geochemical Laboratory

The output of the laboratory, which is directed by Hank Wagenbauer, is summarized in Table 1. During the year an inventory was made of the amount of sample material from the Newfoundland regional lake sediment survey and from several stream sediment surveys. This inventory is necessary to allow the planning of approaches to extend the number of elements analysed on these samples.

During the year two new major pieces of analytical equipment were acquired: an automated graphite furnace for use in ultra-low level trace element analyses with atomic absorption spectrophotometers; and an inductively coupled plasma spectrometer (I.C.P.). The I.C.P., a sequential A.R.L. 3520 model, has been set up and methods developed to determine refractory trace elements in rocks and other sample types which previously had to be sent to outside commercial laboratories for analyses.

Table 1. Summary of Output from the Geochemical Laboratory of the Mineral Development Division for 1985

Sample Preparation	Number of Samples
Rock Samples	2,837
Soil, Till and Sediment Samples	3,065
Samples prepared for outside analysis	6,619
Samples weighed for inventory	38,640
Sample Analysis	**Number of Determinations**
Major and Trace Elements in Silicate Rocks	36,386
Assay and miscellaneous Analyses	3,572
Geochemical Analyses of Sediment, Soil and Till	58,170
	98,128

MINES BRANCH
MINERAL DEVELOPMENT DIVISION
REGIONAL MAPPING – NEWFOUNDLAND

INTRODUCTION

In 1985/86, the Newfoundland Mapping Section consisted of five full-time project geologists with two positions vacant, and a full time geological assistant. During the summer months of 1985, it also included six temporary personnel.

The primary responsibility of the section is to make geological maps of selected parts of insular Newfoundland, with an ultimate objective of providing full coverage for the whole island. Most of the maps are prepared at a scale of 1:50,000, although in some areas where there are relatively few different types of rocks, a scale of 1:100,000 is sufficient.

Mapping was carried out between late May and mid-September, 1985. The rest of the year was used to do laboratory and microscope work on rock samples, to prepare maps and accompanying reports, and to communicate the results to interested parties, particularly companies interested in mineral exploration.

PERSONNEL AND BUDGETS

The following table lists the full-time geologists, and shows the locations of their field projects, the numbers of temporary personnel hired, the sizes of the budgets, and the sources of funds. All budgets are for fiscal year 1985/86.

Geologist	Location of Field Area	Temporary Personnel	Budget	Source of Funds
Stephen Colman-Sadd (Senior Geologist)	South-Central Newfoundland and St. John's (contract A.F. King, MUN)	2	$149,956	Provincial
Lawson Dickson (Project Geologist)	Southern Newfoundland		$ 69,391	CNMDA Joint*
Sean O'Brien (Project Geologist)	No Field Project		$ 47,715	CNMDA Joint
Ian Knight (Project Geologist)	Great Northern Peninsula	3	$113,773	CNMDA Joint
Doug Boyce	Western Newfoundland	1	$ 97,196	CNMDA Nfld.*
John Hayes (Geological Assistant)	No Field Project		Included in Senior Geologist's	Provincial
		Total Budget $478,031		

* Canada-Newfoundland Mineral Development Agreement. 'Joint' projects were jointly funded by Canada and Newfoundland; 'Nfld.' project was separately funded by Newfoundland.

INDIVIDUAL PROJECTS

Stephen Colman-Sadd: Mapping was done in the eastern part of the Snowshoe Pond (N.T.S. 12A/7) area, around the Meelpaeg Lake reservoir and Noel Pauls Brook. The rocks have potential for tin, tungsten, precious and base metal mineralization. Anthony Benoit provided field assistance. In the office, work was completed on a map and report of the Burnt Hill (N.T.S. 2D/5) area, south of Grand Falls, and this was published in September.

A contract was let to Dr. A.F. King of Memorial University to map the area around St. John's (parts of N.T.S. 1N/7 and 10). Field work was completed during 1985, and office and laboratory work will be finished in 1986. The main economic purpose of this sub-project is to provide geotechnical information for engineering and municipal developments. Dr. King's assistant in the field was Dianne Andrews.

As a subsidiary project, John Hayes began designing a colour system for the production of a series of colour 1:250,000 scale geological compilation maps of the island of Newfoundland. The production of such maps has been requested by private industry through the Technical Liaison Committee of the Newfoundland and Labrador Association of Explorationists.

Lawson Dickson: Dickson completed sampling of granitic rocks in south and central Newfoundland (N.T.S. 11P, 12A). The main mineral potential in these rocks is for tin, tungsten and uranium. Laboratory, microscope and computer work was continued on granitic rocks (North Bay Granite) from northwest of Bay d'Espoir.

Sean O'Brien: After completing mapping over a large part of south and central Newfoundland during the last five years, O'Brien spent all of 1985 in St. John's writing up the results. The area on which he is working has potential for tungsten, uranium, precious and base metal mineralization.

Ian Knight: Knight's project is designed to provide geological map coverage of the area underlain by carbonate rocks along the west coast of Newfoundland. During 1985, mapping was done in the Big Brook (N.T.S. 12P/9), Eddies Cove (N.T.S. 12P/8), Big Bay (N.T.S. 12P/2) and Raleigh (N.T.S. 2M/12) areas. Field assistants were Paul Delaney, Graham Smith and Lawrence Patey. The potential in the area is for lead and zinc deposits, similar to the zinc deposit at Daniel's Harbour, and for onshore oil and gas. Several occurrences of zinc mineralization were found. Office work consisted of writing reports on map areas that have already been completed along the western side of the Great Northern Peninsula.

Doug Boyce: This is the only project in the Newfoundland Mapping Section that is not directly involved in the production of geological maps. Boyce is responsible for identifying fossils discovered by himself and other geologists, and thereby dating the rocks which contain them. This is particularly important in the case of Knight's project, where the age of the rocks is an important control on mineralization. Most of the field work that Boyce did in 1985 was concentrated on the carbonate terrane of western Newfoundland, although some of the field season was spent in areas around Notre Dame Bay. Office work consisted of the compilation of paleontological information from western Newfoundland for publication as a report.

STATISTICS

In 1985/86, geological mapping was completed in the equivalent of four 1:50,000 N.T.S. map areas, with a total area of about 4800 km^2.

The total budget was $478,031, giving a cost of $100 per km^2.

INTRODUCTION

In 1985 the Labrador mapping section continued its longterm program of geological mapping as a means of increasing the geological knowledge of Labrador and stimulating mineral exploration. The principal objective of the section is to expand the 1:100,000 map coverage of Labrador with the ultimate objective of providing full coverage at this scale. This was supplemented this year by a new thematic study on the geology and mineralization of granitoid rocks in eastern Labrador. The scientific and economic results of the 1985 field season have been published in Current Research (Report 86-1).

The field activities in 1985 were carried out with a staff of four full-time geologists (R. Wardle, B. Ryan, C. Gower and G. Nunn) and 21 seasonal staff, one of whom, Loretta Crisby, was rehired as a winter assistant. The remaining full-time geologist, Andre Thomas, did not undertake any field surveys but continued his work on previous projects, including the completion of project reports.

Radiometric age dating is a vital support aspect of the Labrador mapping program and, as in previous years, was carried out under a long term contract to Dr. Thomas Krogh of the Royal Ontario Museum.

Project Geologist	Project Name and Location	Temporary Personnel	Budget	Funding Source
Richard J. Wardle (Senior Geologist)	Central Grenville: Goose Bay area	4	$197,975	Provincial
Charles F. Gower	Eastern Grenville: Sand Hill River	6	$221,615	CNMDA Joint
Bruce Ryan	Nain-Churchill: Voisey Bay	4	$214,958	CNMDA Joint
Gerald A.G. Nunn	Western Grenville: Lac Fleur de Mais	5	$237,127	CNMDA Joint
Andrew Kerr	Central Mineral Belt: Granitoids: Makkovik	2	$166,000	CNMDA Joint
Andre Thomas	No field project in 1985	-	$ 34,009	Provincial
Contract – T. Krogh	Geochronology	-	$ 40,000	CNMDA Joint

PROJECT ACTIVITIES

Richard J. Wardle

Mapping at 1:100,000 scale was carried out on NTS sheets 13F/8 and 13F/7 in the Goose Bay area as part of the long term objective of completing the mapping for 1:250,000 NTS sheet 13F in the central Grenville Province. Field activities also included coleadership (with Bruce Ryan) of two field trips: one to the Saglek Fiord area of northern Labrador with members of the Quebec Ministry of Energy and Resources; the other to Kaipokok Bay in Eastern Labrador with members of the Newfoundland and Labrador mapping sections. Both trips were designed to foster interchange of scientific ideas.

Field assistance was provided by Chris Ash (senior assistant), Greg Pittman, Karen Roberts, and Brenda Hewitt.

Office work after the field season concentrated on the preparation of open file maps from the field work and on the compilation of a series of 1:500,000 and 1:1,000,000 maps of southern and central Labrador.

Charles F. Gower

Mapping at 1:100,000 scale was carried out in the Sand Hill River–Batteau area (NTS sheets 13H/1, 2, 7 and 8) of the eastern Grenville Province. This contributes towards the long term project aim of completing the mapping of that part of the Grenville Province exposed on the southeastern Labrador coast. Mineral potential in the area includes sulfide bearing metasedimentary gneisses and uranium enriched granites.

Field assistance was provided by Timothy Van Nostrand, Gordon McRoberts and Loretta Crisby (senior assistants) Bernadine Lawlor, Peter Jeon and Gilbert Wong. Stephen Prevec of McMaster University joined the group to undertake a graduate thesis program on the geochronology of the project area. Further ancillary activities included a paleomagnetic study on Paleozoic dikes undertaken by a Memorial University team under the direction of Dr. Murthy.

Office work after the field season concentrated on synthesis of field data and on preparation of a paper for presentation at the symposium on Proterozoic geochemistry and mineralization held in Nottingham, England in April, 1986.

Bruce Ryan

Field work consisted of mapping of two NTS 1:50,000 sheets (14D/1 and 8) in the area west of Nain, northern Labrador. This was the first year of field work in a project designed to provide a cross-section of the Nain and Churchill structural provinces between the Labrador coast and the Quebec border in the vicinity of the Strange Lake mineral deposit. Mineral potential in the area is vested largely in the granitoid rocks. One of the main aims of the project is to examine the area for further indications of Strange Lake type exotic element mineralization.

Field assistance was provided by Daniel Lee (senior assistant), Scott Molloy, Lloyd Burt and Robert van de Poll.

Office work consisted of preparation of open file maps based on the field work; compilation of earlier detailed mapping in the Nain Bay area; and preparation of two written papers for the Proterozoic geochemistry and mineralization conference held in Nottingham, England, April, 1986.

Gerald A.G. Nunn

Field work in western Labrador consisted of the 1:100,000 mapping of NTS 1:50,000 sheets 23A/1, 2, 7 and 8, 22P/15, most of 22P/16 and those parts of 22P/9 and 22P/10 lying in Labrador. This project was carried out in conjunction with a four-person Geological Survey of Canada field party led by Dr. Ron Emslie which concentrated on mapping of the Atikonak River anorthosite massif. The long term aim of the project is to complete mapping of the Grenville Province in the vicinity of the mining towns of Wabush and Labrador City.

Field assistance was provided by Nath Noel and Stewart Wells (senior assistants), Michelle Rice, Heather McCleave, John Smyth and Gale Wiseman.

Subsequent office activity concentrated on synthesis of field data and preparation of reports on previous project areas in the western Grenville Province.

Andrew Kerr

The Central Mineral Belt granitoid project was a new project in 1985 designed to examine the mineralization and mineral potential of granitoid rocks in the eastern part of the Trans-Labrador batholith. The initial part of this work, which was mostly completed in 1985, consisted of a helicopter supported grid sampling program designed to provide a regional geochemical-petrographic database for the granitoid rocks. This was supplemented by examination of known granitoid-hosted mineral occurrences in the area. The economic potential in these rocks is largely for molybdenum, uranium, tungsten, and possibly tin.

The project was closely coordinated with mineral deposit studies undertaken by Dr. Derek Wilton and graduate students Craig McDougall and Leonard McKenzie of Memorial University, supported by the federal component of the CNMDA.

Field assistance was provided by Gerald Squires (senior assistant) and Ashley Phillips.

Office work consisted largely of synthesis of field data, statistical analysis of lake sediment geochemical data, and report preparation.

Andre Thomas

Andre Thomas was previously responsible for a mapping project in the west-central Grenville Province and was engaged in 1985-86 in the preparation of reports and maps emmanating from this work under the Co-op and DREE federal-provincial agreement. One report was completed, and the two others in the final stages of preparation at the end of the year.

Geochronology

120 samples for uranium-lead zircon dating were collected in the 1985 field season for future analyses. In addition, dating results were received for the 10 samples collected during the 1984 season. A final report on 1984 work was received in March, 1986.

Statistics

Field work started in June and ended in late August-early September, 1985, and resulted in map completion of an additional 3.6% percent of Labrador. Map coverage of Labrador at the 1:100,000 (or more detailed) scale now stands at 42%. Total budget for the Labrador section in 1985 was $1,111,684.

BUDGET

The budget for the 1985-86 fiscal year was approximately $600,000.

PERSONNEL

During 1985/86, the Head of the Section was Rex Gibbons, Senior Geologist. In Report Production, there was one Editor/Review Geologist, Frank Blackwood, three word processor (WP) operator positions, and one clerk-typist, Judy-Lynn Reid. The lead operator was Debbie Downey. The other operators were Bev Strickland (Cluster Administrator) and Joanne Rooney. For the winter of 1986, Des Walsh assisted Blackwood as copy editor.

In mid-year, the section obtained a Compugraphic Typesetter PowerView 10 system. While Strickland was on maternity leave for 4 months, Rooney was typesetter operator, Reid was word processor operator, and Catherine Crockwell was hired as temporary clerk-typist.

In Technical Information, there were a mineral exploration consultant as supervisor, Norman Mercer; a librarian, Genie Power; an information officer, Randy Meehan; and a microfiche clerk, Pam Ryan. Positions of sales clerk and library assistant remained vacant all year due to inadequate funds. Catherine Patey continued as geologist in charge of GEOSCAN, the computerized bibliography to all available reports on the province's mineral resources. For the Fall and Winter, Catherine Van Nostrand worked with Patey as GEOSCAN coding assistant.

In Drill Core Storage, Alvin Harris continued as project geologist operating out of St. John's and Stewart Cochrane continued to work at the Pasadena core library. During the 1985 field season, Richard Lucas and Wallace Tobin, both students of Mineral Technology at Bay St. George Community College, Stephenville, were hired to help with core collection and indexing.

The Section had no personnel specifically assigned to Educational Services, Public Relations and Advertising. However, in April, 1986, Kevin Brewer was hired as Public Information Coordinator under the Canada-Newfoundland Mineral Development Agreement.

ACTIVITIES

Report Production

1985/86 was a very busy year. A large number of reports, open files, and maps were edited and published. Work concentrated on the completion of reports and maps on projects done under the Canada/Newfoundland Mineral Development Subsidiary Agreement (1984-1989) and the Canada/Newfoundland Cooperative Minerals Program (1982-1984).

The most significant single accomplishment of the year was the completion and publication of Report 86-1, the first report to be completely typeset in-house on the section's new Compugraphic typesetter. An appendix to this annual report lists all the reports, maps, and files released in 1985/86.

Progress also continued on several other major reports which are scheduled to be completed in 1986-87.

Core Storage Project

The Department of Mines and Energy operates three drill core libraries, located in St. John's, Pasadena and Goose Bay.

The St. John's library is staffed on a full-time basis, except during the field season. It has a capacity of 60,000 m of drill core. Approximately 12,000 m of drill core has been catalogued and placed on the rack system to date. Most of this core is from eastern Newfoundland, from the St. Lawrence area and the 'silica survey' drilling conducted by the provincial government during the 1960's. Drill core logs and location maps have been prepared for catalogued core. The St. John's library also contains rock cutting equipment, core splitters, a stereomicroscope, a magnetic susceptibility meter, a resistivity meter, an ultraviolet light and a McPhar TV-1 scintillometer. This facility and equipment is available for use on approved projects by exploration geologists, university researchers, the staff of the Department of Mines and Energy and other interested persons.

The Pasadena core library is also staffed on a full-time basis. This library has equipment and facilities similar to the St. John's library and has a capacity of 200,000 m of core. It has a ventilated room for storing radioactive core and a humidity-controlled room for storing salt core. There are approximately 121,000 m of core presently stored in the Pasadena library, collected from drilling sites west of Gander.

The Goose Bay core library, which contains core from Labrador, though not staffed full-time, has a capacity of 60,000 m of core, with room for expansion. Approxiamtely 8,600 m of core have been catalogued and placed on the rack system to date.

During the 1985 field season, drill core collection continued in insular Newfoundland, and abandoned drill sites in Labrador were inspected and core identified for collection in 1985 and 1986. To date, the core storage program has collected about 150,000 m of drill core, of which about 120,000 m is classified as 'open' and is available for inspection by interested persons.

The core storage program is presently storing about 30,000 m of core from ten drilling projects on a confidential basis.

Technical Information

The Mineral Development Division maintains a geological and mineral resource assessment file system which is referred to as the 'Mineral Assessment Report Library'. This library presently consists of approximately 9,000 geological and geochemical reports, maps, journal articles and mineral assessment files, making them the largest and most comprehensive single collection of geoscience documents about Newfoundland and Labrador.

As a result of the high level of mineral exploration activity experienced during the late 1970's and early 1980's throughout the province, the amount of new data submitted increased substantially. New information is now available on many of the old and also numerous new mineral occurrences in the province.

Mining and exploration companies, prospectors, geotechnical and consultant firms, government agencies, universities, libraries and the general public are continually making use of the geofiles and requesting information from them. Requests have increased substantially in the past few years.

During the past five years the Publications and Information Section has been putting all of the good quality mineral assessment reports on microfiche. This provides a much more efficient system of maintaining the geofiles. Requests for information are processed more rapidly and easily, with relatively inexpensive charges for microfiche.

The microfiche project involves weekly filming of batches of reports. The reports are cross-checked before filming for quality, content and reproducibility. Two microfiche originals are made and cataloged for each file. Filing follows the standards of the National Topographic System. Duplicates can be copied from the original fiche upon demand. One set of fiche originals is stored offsite at the Torbay Core Library for security and protection from fire.

Microfiche sets of mineral assessment reports covering all 1:250,000 N.T.S. blocks in insular Newfoundland are available as well as microfiche sets for many of the Newfoundland General Series reports. Several releases have also been made for microfiche sets of mineral assessment reports from a number of the 1:250,000 N.T.S. blocks in Labrador.

Work on the Labrador mineral assessment reports is continuing and we are expecting to make several more releases of duplicate sets of microfiche in 1986/87.

During 1985/86, we also continued placing the mineral occurrence reports on microfiche and making them available. Presently, mineral occurrence reports for N.T.S. 1N, 2C, 2D, 2E, 2F, 2L, 2M, 11O, 11P, 12B, 12G, 12H, 12I, 12P, 13K, 13N, 14C are available. Further releases will be made as staff in the Mineral Deposits Section complete new areas.

The publications distribution center continued to grow in 1985/86 as more new reports were published. Our storage space problems were relieved by the provision of space at the old College of Fisheries on Merrymeeting Road.

GEOSCAN

GEOSCAN is a computerized bibliographic database of Canadian-produced and/or Canada-related geoscience documents.

The Newfoundland Department of Mines and Energy is one of the ten agencies which index documents for input into this database. Our Mineral Assessment Report Library files and mineral inventory cards are the sources of our indexed documents. Other agencies, e.g. the Geological Survey of Canada and the Earth Physics Branch of the Canada Department of Energy, Mines and Resources, also produce and index documents that concern this province.

In 1982, the National GEOSCAN Center, which manages GEOSCAN, implemented a new software system, called MINISIS, to input and retrieve the bibliographic data more effectively. In the implementation of the new system, all the old documents were converted to a new format. For example, different types of keywords were moved into different fields: map types, illustrations, geological terms. Although most of the records did convert, they did not convert cleanly and completely. For example, reports may be missing a title or authors and terms may have been assigned to the wrong fields. In cooperation with the National GEOSCAN Center, these old documents are being corrected.

All new documents are input directly onto the new system and are immediately retrievable online. To date, only indexed documents from assessment files have been keyed into the new system, although other types of documents, in particular government publications, have been coded.

Besides indexing and keying new documents, new coding sheets are being produced, the authority files or thesauri used in coding are being enlarged, and the terms used are being more clearly defined.

All of the 87,000 GEOSCAN records from across Canada, including those concerning this province, are available through online computer searches at the Geological Survey of Canada Library in Ottawa and, in St. John's, at our Publications and Information Section. Searches are performed on a cost-recovery basis with a minimal charge of $10.00 per search topic. A moderate size search (100-200 titles) costs between $15 and $45.

As well, GEOSCAN Newfoundland and Labrador indexes current to February 1982, the date of the last update on the old system, are available from the Publications and Information Section. A computer printout sorted by National Topographic System area is also available for the newer documents.

Educational Services

In 1985/86, the Section continued to provide a variety of educational services to the province's schools. About 100 rock and mineral sets were distributed free to teachers involved in teaching earth sciences in high school or about mineral resources in elementary school. Brochures and maps on mining and geology were distributed free to schools that requested them.

The Section participated in several school Careers Days, where talks were given on mining in Newfoundland and Labrador. Assistance was also provided in judging several science fairs, including the provincial Science Fair for eastern Newfoundland.

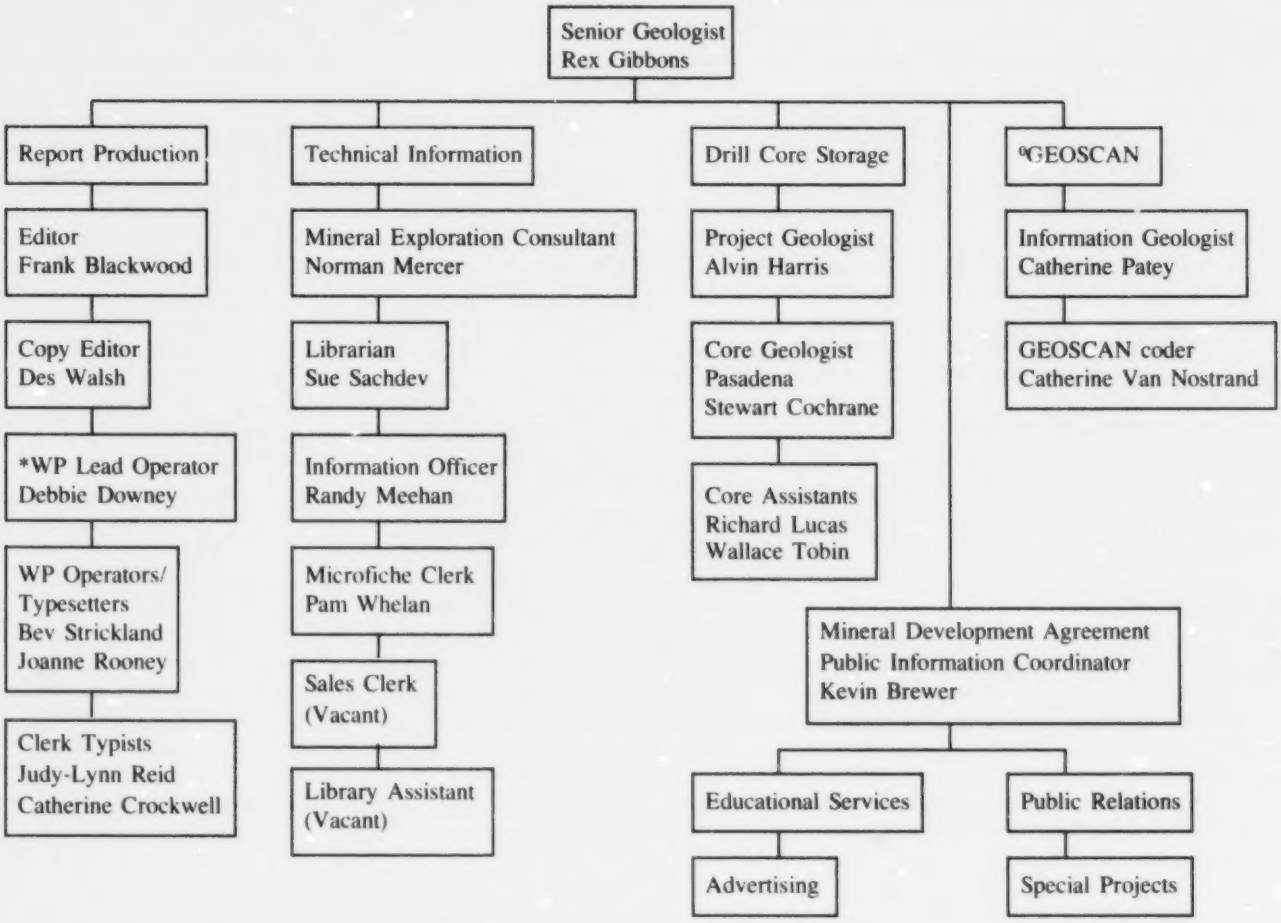
In cooperation with the Newfoundland Section of the Geological Association of Canada, the Section helped to distribute two issues of the Newfoundland Journal of Geological Education to schools throughout the province.

Public Relations and Advertising

The Section coordinates the preparation of news releases for the Mines Branch, for example, end-of-year review of mining for the past year plus occasional updates or special events. In 1985/86, major releases were prepared to coincide with the Prospectors Convention in Toronto in March and the Canadian Institute of Mining (Newfoundland Branch) meeting and the Department's open house in November in St. John's. Displays were presented promoting mining opportunities in the province in both these cases as well. The Section also had a display at the Newfoundland Section (G.A.C.) meetings in 1985/86.

The Section represented the Department at several public meetings, including St. John's Board of Trade Business Outlook in January and Western Region Economic Conference in Corner Brook, where presentations were made on activities in the mineral industry in the province.

PERSONNEL CHART, 1985/86



* WP - Word Processor.

ºGEOSCAN - Computerized bibliographic index to mineral occurrence and related data.

CARTOGRAPHIC SECTION

Maps are a primary means of communicating geological information. The section takes the manuscript maps produced by the department's geologists through the various stages of production to the final components required for printing. This capability applies to both black and white and multicolor maps. The section also produces a wide variety of other illustrative material for the department staff, including slides for oral presentations and graphic displays for workshops and meetings.

BUDGET

Salaries, equipment and supplies, base maps, photographic costs, and travel for the 1985-86 fiscal year totaled $245,615.

PERSONNEL

The section currently consists of one supervisor, Cartographic and Photomechanical Services, one cartographic and photomechanical technician, two cartographic technicians, and will be increasing its staff by one cartographic technician later in the year.

SCRIBING AND MAP PRODUCTION

The section is responsible for the scribing of geological maps, the preparation of type overlays and color separation negatives for color proofing maps, and the preparation of composite and printing negatives. It is also responsible for checking register and color during map printing both in and out of the province.

PHOTOMECHANICAL LABORATORY

During 1985 the photomechanical laboratory supplied the department with a complete range of services such as contact and projection negatives and positives at various scales, composite negatives and positives, continuous tone black and white and color prints, halftone negatives and positives, peel coats, color proofs, stripping film, screened printing negatives and a variety of other photographic products.

In 1985, a color processing unit was supposed to be added to produce color prints from slides or negatives, color photography of various maps, charts, etc., and photographic color separation negatives for printing. Most of the equipment for the color laboratory was purchased, but unfortunately space constraints have led to a postponement of actual production.

SUMMARY OF CARTOGRAPHIC AND PHOTO-MECHANICAL PRODUCTION

Computerized Cartographic Inventory System

During 1985-86 a computerized file management system was introduced to assist in the recording and retrieval of information. This system has allowed the development of a computerized inventory system which is necessary for the daily operation of the Cartographic Section. Indexes for both the aerial photographs and the topographic base maps existing in our files have now been completed. By the end of the year an index will also be compiled for the reprographic components of most geological maps published since 1968. In the future, the system will be used to schedule daily operations in the office.

Published Maps (167)

Scale	Black & White	Multi-Color	Three Color	Two Color	Open File
1:10,000	-	-	-	-	64
1:25,000	-	-	-	-	7
1:50,000	-	-	-	1	42
1:100,000	-	5	-	1	3
1:250,000	-	-	3	1	6
Other	28	-	-	-	-
Total	28	5	3	3	122

Presently Being Drafted (161)

Scale	Black & White	Multi-Color	Three Color	Two Color	Open File
1:10,000	-	-	-	-	-
1:25,000	-	-	-	-	-
1:50,000	-	-	-	-	-
1:100,000	-	-	3	3	60
1:250,000	10	5	-	-	-
Other	80	-	-	-	-
Total	90	5	3	3	60

Photomechanical

Cont. Tone Pos.	11
Color Proof	46
Comp. Neg.	156
Comp. Paper Pos.	28
Comp. Pos.	106
Direct Pos.	169
Dup Neg.	56
Film Pos.	152
Halftone Neg.	20
Halftone Pos.	168
Neg.	185
Paper Pos.	209
Peel	30
PMT	435
Stripping Film	62

Illustrative Material

Approximately 1,600 figures, illustrations and perspective drawings for various reports such as:

- Memoirs
- Current Research
- Review of Activities
- External Publications, e.g. Canadian Journal of Earth Sciences
- Summaries, etc.

Graphic Art and Display Material

Approximately 450 various graphs, charts, slides, etc. were produced for displays and talks such as:

- Show and Tell
- Prospectors meetings
- Talks and workshops, etc.

Student Tours

During the year, the section was called upon from time to time to provide demonstrations and brief outlines of the operations to students of the university, technical colleges and various high schools in the area.

PUBLICATIONS & INFORMATION SECTION
NEWFOUNDLAND DEPARTMENT OF MINES AND ENERGY
P.O. Box 4750, 95 BONAVENTURE AVENUE
ST. JOHN'S, NEWFOUNDLAND A1C 5T7
Phone (709) 576-3159
Telex 016-4724
EOS 21:NME001

LIST OF PUBLICATIONS FOR 1985-86

REPORTS

Brewer, K., Walsh, D. and Gibbons, R.V.
1985: Current Research; Newfoundland Department of Mines and Energy, Report 85-1. Contains technical reports on 1984 field and office projects of the Mineral Development Division. **PRICE: $10.00**

Wardle, R.J.
1985: Geology of the Churchill Falls Area (13E/12, 23H/9, 10, 15, 16). Newfoundland Department of Mines and Energy, Report 85-2. Includes two 1:100,000 scale geology maps. **PRICE: $10.00**

Colman-Sadd, S.P.
1985: Geology of the Burnt Hill Map Area (2D/5), Newfoundland. Newfoundland Department of Mines and Energy, Report 85-3. Includes one 1:50,000 geology map. **PRICE: $10.00**

Blackwood, R. Frank
1985: Geology of the Facheux Bay Map Area (11P/9), Newfoundland; Newfoundland Department of Mines and Energy, Report 85-4. Includes one geology map at a scale of 1:50,000. **PRICE $10.00**

Blackwood, R.F. and Des Walsh
1985: Preliminary Current Research for 1985; Newfoundland Department of Mines and Energy. Contains preliminary reports on 1985 field and office projects of the Mineral Development Division. **PRICE $3.00**

Blackwood, R.F., Walsh, D. and Gibbons, R.V.
1986: Current Research; Newfoundland Department of Mines and Energy, Report 86-1. Contains technical reports on 1985 field and office projects of the Mineral Development Division. **PRICE $16.00.**

NEWFOUNDLAND MINERAL OCCURRENCE MAPS

Map 8530 2L & 12I, Port Saunders
Map 8562 1K, 1L, 1M, 1N & 2C, Avalon Peninsula

(Scale 1:250,000)

NEWFOUNDLAND GEOLOGY MAPS

Knight, Ian
1985: Geology of Bellburns Map Area (12I/5,6), Newfoundland; Newfoundland Department of Mines and Energy, Map 8563 Scale: 1:50,000. **PRICE: $3.00**

Colman-Sadd, S.P.
1985: Geology of Snowshoe Pond Map Area (12A/7, east part), Newfoundland; Newfoundland Department of Mines and Energy, Map 8564. Scale 1:50,000. **PRICE: $3.00**

King, A.F.
1985: Geology of the St. John's Area (1N/10b,a), Newfoundland; Newfoundland Department of Mines and Energy, Map 8567. Scale: 1:25,000. **PRICE: $2.00**

King, A.F.
1985: Geology of the Cochrane Pond Area (1N/7F north half), Newfoundland; Newfoundland Department of Mines and Energy, Map 8568. Scale: 1:25,000. **PRICE: $2.00**

King, A.F.
1985: Geology of the Torbay Area (1N/10G south half), Newfoundland; Newfoundland Department of Mines and Energy, Map 8569. Scale: 1:25,000. **PRICE: $2.00**

King, A.F.
1985: Geology of the Petty Harbour Area (1N/7G north half), Newfoundland; Newfoundland Department of Mines and Energy, Map 8570. Scale: 1:25,000. **PRICE: $2.00**

King, A.F.
1985: Geology of the Windsor Lake Area (1N/10C), Newfoundland; Newfoundland Department of Mines and Energy, Map 8571. Scale: 1:25,000. **PRICE: $2.00**

King, A.F.
1985: Geology of the Bauline Area (1N/10F south half), Newfoundland; Newfoundland Department of Mines and Energy, Map 8572. Scale: 1:25,000. **PRICE: $2.00**

King, A.F.
1985: Geology of the Topsail Area (1N/10d), Newfoundland; Newfoundland Department of Mines and Energy, Map 8573. Scale: 1:25,000. **PRICE: $2.00**

1986:
Index to the most recent geological maps for the Island of Newfoundland; Newfoundland Department of Mines and Energy, Map 8631. **PRICE: $3.00 (blueprint) $5.00 (Sepia)**

LABRADOR GEOLOGY MAPS

Rivers, T.
1985: Geology of the Opocopa Lake area, Labrador (23B/NE); Newfoundland Department of Mines and Energy, Map 8524. (Colored) Scale: 1:100,000. **PRICE: $5.00**

Rivers, T.
1985: Geology of the Lac Virot area, Labrador (parts of 23G and 23B); Newfoundland Department of Mines and Energy, Map 8525. (Colored) Scale: 1:100,000. **PRICE:$5.00**

Rivers, T.
1985: Geology of the Gabbro Lake area, Labrador (23H/NW); Newfoundland Department of Mines and Energy, Map 8526. (Colored) Scale 1:100,000. **PRICE: $5.00**

Rivers, T.
1985: Geology of the Evening Lake area, Labrador (23G/NE); Newfoundland Department of Mines and Energy, Map 8527. (Colored) Scale 1:100,000. **PRICE: $5.00**

Rivers, T.
1985: Geology of the Wightman Lake area, Labrador (23G/SE); Newfoundland Department of Mines and Energy, Map 8528. (Colored) Scale 1:100,000. **PRICE: $5.00**

Wardle, R.J.
1985: Geology of the Goose Bay-Goose River map areas (13F/7,8), Labrador; Newfoundland Department of Mines and Energy, Map 8565. Scale: 1:100,000. **PRICE: $3.00**

Ryan, A.B.
1985: Geology of the Anaktalik Brook - Kogaluk River map areas (14D/1,8), Labrador; Newfoundland Department of Mines and Energy, Map 8566. Scale: 1:100,000. **PRICE: $3.00**

OPEN FILES - NEWFOUNDLAND

Bragg, D.

1985: Geotechnical bedrock compilation maps of Newfoundland; Newfoundland Department of Mines and Energy, Open File NFLD (1485). Scale: 1:250,000. (Supplemental maps to Report 83-2). This file includes the following maps:

11O	Port aux Basques	2E	Botwood
11P & 11I	Burgeo	12G	Bay of Islands
1M	Belleoram	12I & 2L	Port Saunders
1N	St. John's	12P	Blanc-Sablon
2D	Gander Lake		

PRICE: Paper copies of individual maps from the series can be purchased for $3.00 each or the whole series can be purchased for $25.00. A microfiche copy of the complete open file costs $2.00.

Butler, A.J.

1985: Stream sediment geochemistry of the Kim Lake area (parts of N.T.S. 2D), south-central Newfoundland; Newfoundland Department of Mines and Energy, Open File NFLD (1482). 11 maps; summary report; data listing. **PRICE: $30.00 (paper) $3.00 (microfiche).**

1985: Stream and soil geochemistry of the Catalina area, Bonavista Peninsula, Newfoundland; Newfoundland Department of Mines and Energy, Open File 2C(53). Report; 20 maps; microfiche data listing; (printed copies of data listings & microfiche copies of maps available upon request). **PRICE: $30 (paper) $3.00 (microfiche)**

Harris, A. and Cochrane, S.

1985: Core storage program and catalogue of drill core on file at the Department of Mines and Energy core storage libraries; Newfoundland Department of Mines and Energy, Open File NFLD (1479). Report; 71 location maps. **PRICE: $7.00 (microfiche), or $3.00 per blueprint copy**

McConnell, J.W.

1985: Gold in Newfoundland lake sediments: A pilot study; Newfoundland Department of Mines and Energy, Open File NFLD 1488. This open file presents initial results of a pilot study to evaluate the effectiveness of lake sediment as a sample medium for distinguishing areas of known gold mineralization. Areas sampled were Chetwynd, Isle aux Morts River and La Poile River in southwestern Newfoundland. **PRICE: $5.00 (paper) $1.00 (microfiche)**

Meyer, J.R. and Butler, A.J.

1985: Stream sediment geochemistry of the Fleur de Lys belt on the western side of the Baie Verte Peninsula; Newfoundland Department of Mines and Energy, Open File 12H(906). Text; 13 maps. **PRICE: $30.00 (paper) $3.00 (microfiche).**

Miller, H.G.

1985: (1) Indian Bay Pond gravity survey; Open File NFLD (1486). (2) Ackley Batholith gravity survey; Open File NFLD (1487). (3) Third Berry Hill Pond gravity survey; Open File 2D (155). Newfoundland Department of Mines and Energy. These files contain gravity data collected during the 1983 and 1985 field seasons as a result of a joint Mines and Energy and Memorial University survey of the areas. Also included are data collected, reduced, and previously published by the Earth Physics Branch of Energy, Mines and Resources Canada and Memorial University. **PRICE: $3.00 (paper), or $1.00 (microfiche)**

OPEN FILES - LABRADOR

Newfoundland Department of Mines and Energy

1985: Regional lake sediment and water geochemical reconnaissance data, N.T.S. area 13A, and parts of 3D, 2M and 12P, Labrador. Newfoundland Department of Mines and Energy, Open File Lab. (689) (G.S.C. Open File 1102). Report; sample location map; 21 geochemical maps. **PRICE: $45.00 (paper), $4.00 (microfiche)**

RELEASE OF UPDATED MINERAL OCCURRENCE RECORDS ON MICROFICHE

PRICE: N.T.S. 1N - 13 microfiche duplicates - $ 6.50
N.T.S. 11P - 9 microfiche duplicates - $ 4.50
N.T.S. 12A - 31 microfiche duplicates - $15.50

RELEASE OF MICROFICHE OF OPEN GEOFILES - LABRADOR (Part 6)

This release consists of 32 open files on a total of 69 microfiche duplicates (also includes an index list).

This release includes only those files that have been checked and which produced good quality microfiche. They consist of assessment reports and other documents on the geology and mineral resources of N.T.S. 23J Labrador.

PRICE: $35.00 for the complete set

External Publications, 1985-86

(Newfoundland Dept. of Mines and Energy authors in bold print)

ANDREWS, K. and **Mercer, N.**, 1985. Significant gold discovery sparks claim staking rush in Newfoundland. Northern Miner, March 7, 1985.

ARIMA, M., KERRICH, R. and **THOMAS, A.**, 1986. Geobarometry, geothermometry $18_0/16_0$ and related geochemistry of Grenville Province sapphirine bearing granulites from central Labrador. In Geological Association of Canada, Program with Abstracts, Volume 11, p. 42. (Abstract)

ARIMA, M., KERRICH, R. and **THOMAS, A.**, 1986. Sapphirine-bearing paragneiss from the northern Grenville Province in Labrador, Canada: protolith composition and metamorphic P-T conditions. Geology, in press.

BLACKWOOD, R.F., 1985. The Hermitage Flexure, southern Newfoundland: The result of strike-slip faulting along the margins of the Central Mobile Belt? Geological Association of Canada - Mineralogical Association of Canada. Joint Annual Meeting, Fredericton, New Brunswick. (Abstract)

COLMAN-SADD, S.P., 1985. The extent and significance of proposed tectonic windows in the central Newfoundland Appalachians. Geological Association of Canada - Mineralogical Association of Canada Joint Annual Meeting, Fredericton. (Abstract)

COLMAN-SADD, S.P. and **SWINDEN, H.S.**, 1985. The Tim Horton Complex. Tim's Times, **2**, p. 1.

DEAN, P.L., SWINDEN, H.S., **O'DRISCOLL, C.F.**, and **KEAN, B.F.**, 1985. Gold-bearing geological environments in Newfoundland and Labrador. Northern Miner, **71(15)**, June 20, 1985. Also presented to the annual meeting of the Prospectors and Developers Association, Toronto, March, 1985. (Abstract)

DEAN, P.L., SWINDEN, H.S., **O'DRISCOLL, C.F.**, **TUACH, J.**, and **KEAN, B.F.**, 1985. Gold-bearing geological environments in Newfoundland. A paper presented to the Northwest Mining Association 91st Annual Convention, Spokane, Washington, U.S.

DICKSON, W.L. and **TUACH, J.**, 1986. Docking of Avalonia with North America - The significance of the Ackley Granite, Newfoundland. Abstract with Program, Iberian Terranes conference, Oviedo, Spain, September 1986. (Abstract)

DUNNING, G.R., KROGH, T.E., **KEAN, B.F.**, **O'BRIEN, S.** and SWINDEN, H.S., 1986. U/Pb zircon ages of volcanic groups from the Central Mobile Belt, Newfoundland. GAC-MAC Joint Annual Meeting, Ottawa. (Abstract)

GOWER, C.F., 1985. Correlations between the Grenville Province and Sveconorwegian Orogenic Belt - implications for Proterozoic evolution of the southern margin of the Canadian and Baltic Shields. In The Deep Proterozoic Crust in the North Atlantic Provinces. Edited by A.C. Tubi and J.L.R. Tormet. NATO Advanced Studies Institute, Series C: Mathematical and Physical Sciences, Volume 158.

GOWER, C.F., 1985. Middle Proterozoic metamorphism in the Grenville Province of eastern Labrador. Geological Association of Canada - Mineralogical Association of Canada, Joint Annual Meeting, Fredericton. (Abstract)

GOWER, C.F., 1986. Geology of the Double Mer - White Hills and surrounding region, Grenville Province, eastern Labrador. Geological Survey of Canada, Paper 86-15.

GOWER, C.F. and **RYAN, A.B.**, 1986. Proterozoic evolution of the Grenville Province and adjacent Makkovik Province in eastern-central Labrador. In The Grenville Province. Geological Association of Canada, Special Paper.

GOWER, C.F., ERDMER, P.E. and **WARDLE, R.J.**, 1986. The Double Mer Formation and the Lake Melville rift system, eastern Labrador. Canadian Journal of Earth Sciences, Volume 23, pp. 359-368.

HERD, R.K., ACKERMAND, D., **THOMAS, A.** and WINDLEY, B.F., 1986. Oxygen fugacity variations and mineral reactions in sapphirine-bearing paragneisses, E. Grenville Province, Canada. Mineralogical Magazine, in press.

KEEN, C.E., KEEN, M.J., NICHOLS, B., REID, I., STOCKMAL, G.S., **COLMAN-SADD, S.P.**, **O'BRIEN,** S.J., MILLER, H.G., QUINLAN, G., WILLIAMS, H. and WRIGHT, J., 1986. Deep seismic reflection profile across the Northern Appalachians. Geology, Volume 14, p. 141-145.

KEEN, C.E., REID, I., NICHOLS, B., KEEN, M., QUINLAN, G., WILLIAMS, H., WRIGHT, J., MILLER, H., **COLMAN-SADD, S.P.** and STOCKMAL, G., 1985. Lithoprobe East: results from marine deep seismic reflection lines across the Appalachians and the continental margin northeast of Newfoundland. Canadian Society of Exploration Geophysicists - Canadian Geophysical Union National Convention, Calgary and Geological Association of Canada - Mineralogical Association of Canada Joint Annual Meeting, Fredericton. (Abstract)

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